

Flight, April 22, 1911.

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

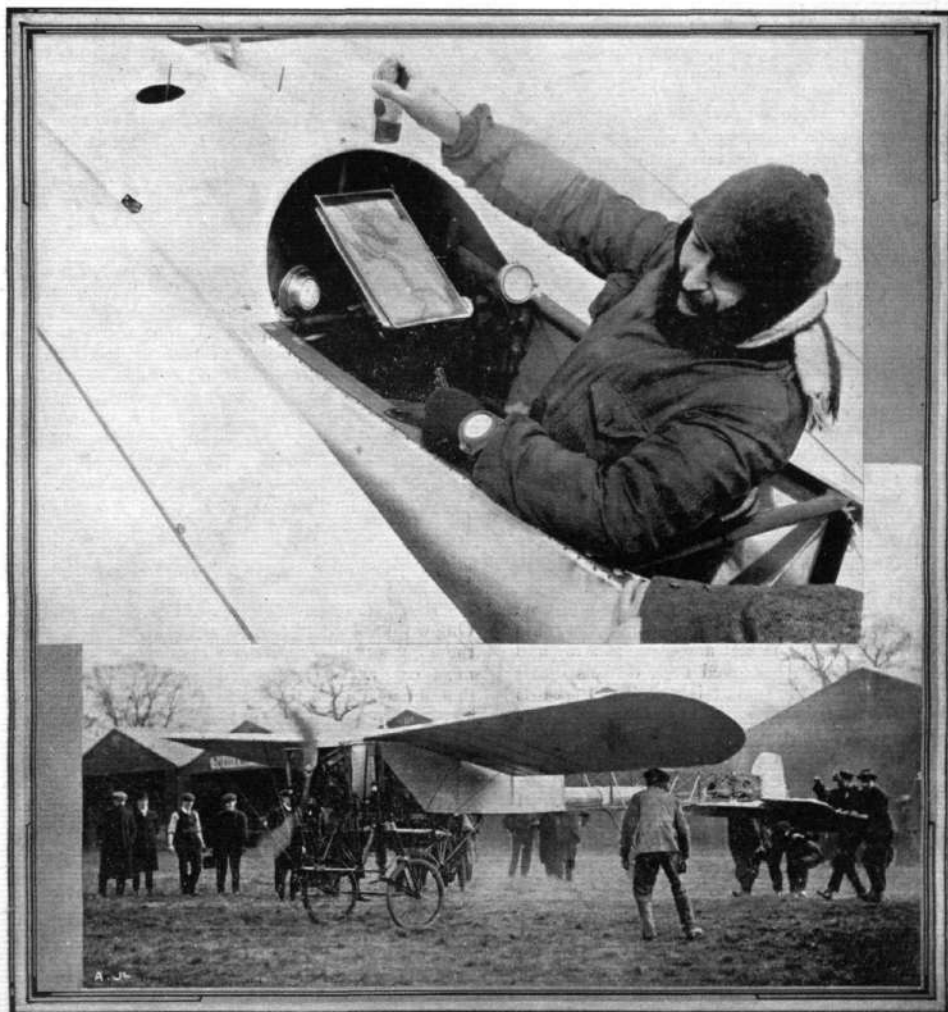
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 121. (No. 16. Vol. III.)

APRIL 22, 1911.

[Registered at the G.P.O.
as a Newspaper.]

[Weekly. Price 1d.
Post Free, 1½d.]



LONDON TO PARIS FLIGHT.—Above is M. Prier in his seat, with route map in front of him, just before his start from Hendon; and below is M. Prier's Gnome-engine Bleriot having its final testing immediately before the start for this record journey last week.

OUR PRIZE SCHEME FOR FLYING MACHINE MODEL-MAKERS.

By reason of what we have written in relation to the making and flying of models, during and since the late Show, and particularly after reading the article referring to our new model prize scheme in this issue of *FLIGHT*, some of our more serious minded readers may perhaps gather the impression that we are inclined to lay too much stress upon the development of the model aeroplane. We confess that at first sight this impression may almost appear to have some small justification in fact; but we hasten to assure our readers that it is in appearance only, and venture to think that one and all will be bound to confess on more mature consideration that the subject is one not easily to be over-estimated in its present importance. Our scheme for the encouragement of the maker of models is the outcome of much serious thought upon the possibilities of the model in relation to the future development of the industry. Up to the present, model research—if, indeed, there has been much in that connection which can be dignified by the name of research—has been apt to proceed along entirely casual lines and its product has been treated in equally off-hand manner by the societies of encouragement. Not that the latter are to blame for this in the very slightest degree. They have had their hands full with other and possibly more serious problems and have had neither the time nor the necessity to take any part in model development. By no necessity we mean that up to now the model machine has not shown itself to be of sufficient relative importance from the development point of view to warrant its being treated seriously. In its main lines it has either been a copy—scale or otherwise—of one of the existing types of successful flyers or a toy designed for the purposes of pure amusement.

With this bald statement of facts as they are, we imagine that most of our readers will agree; and we are confident that they will equally agree that the position need no longer continue to be such as it undoubtedly is. The model should be by this time contributing its quota to the sum total of knowledge anent the laws and principles of flight. But the fact remains that to all practical intent, the movement is hardly one whit farther ahead for all the time and energy that has been expended on the majority of models since the first was flown. True, most models fly better than they did, but that is simply due to the fact that the rapid development of aerial science has created a demand for the model aeroplane as a toy and the makers of them have improved their designs under stress of competition. The point is, however, that it is questionable whether the majority of makers—be they professional or amateur—know exactly what they have accomplished, or how or why their productions behave as they do.

Our diagnosis of the reasons which have produced the effect we have set out are that, first and foremost, although there are plenty of enthusiasts at work on the building and flying of models, comparatively few of them have any more definite objective than to make their machines fly successfully. Well, we hear it said, and what other or better objective could they have? We admit that after all this is the main object not only in the model but in all types of flying machine, but then knowledge is not advanced if it is not known why the machine does successfully leave the ground, and after all said and done the fun is apt soon

to pall if there is no stronger interest behind it all than that of witnessing repeatedly one solitary type of performance. It is on all fours with the case of the cook who places a kettle of water on the stove and who knows that by so doing the water will boil, but how or why or by what calorific process she knows not. Sufficient for her is it that the water does boil. That is the case with nine out of ten model enthusiasts, at any rate with those coming within the youthful amateur category, with whom in particular we are concerned at the moment. They are simply imitators, conscious or unconscious, and so long as their machines fly they are content with the simple knowledge and achievement, the underlying reasons troubling them not a whit.

It is just this state of mind which our modest prize scheme is designed to counteract. Particularly is it the younger members of the cult whom we want to reach, for it is they who will form the great interested public of to-morrow and to whom we have to look to fill the ranks of the aviators of the future. What we desire to do is to get them to think in terms of aeronautics and to get imbued with the real principles of the science. They go on with their building and modelling; some of their machines fly and more of them do not; and how much farther do they or anyone else get for all the effort expended? Not very much. But how much better would it be if these experimenters were encouraged to actually put down on paper the main outlines of their experiments? To sketch out the lines of what they expected to achieve by any particular experiment and why the result was anticipated. To tell exactly what happened in the course of that experiment and the probable cause of success or failure. That way lies progress and an increased sum of knowledge which cannot fail to be of permanent benefit to the movement. It should convert undirected effort into real and intelligent research. The least effect that can possibly be produced must be an educational one of very great value.

So much for the objects and what we hope to achieve by the institution of this model prize scheme of ours. With regard to the details of the idea, we must refer our readers to another page of this issue in which the reasons that have prompted our action are set forth at greater length and in more detail than can be given to them here. One word we would say upon the question of the prizes themselves. It is a matter to which we have given the most careful thought, which has led us to the decision that it is best not to put forward an elaborate scheme involving prizes of large intrinsic worth, for that we hold to be neither necessary nor desirable. Indeed, we almost doubt whether actual prizes are necessary in order to achieve the object we have set ourselves as a goal, so we have based our awards at a mark which simply affords mere recognition of good work done. They are frankly not worth competing for judged from the point of view of their intrinsic value—which is precisely what our intention is. Unless we judge our public quite wrongly, our scheme as it stands will bring forward all the competitors we want, and will amply serve to sharpen up the latent keenness that exists in such full measure within the youthful brains of quite a considerable percentage of those now acquiring their necessary educational equipment in readiness to play their allotted parts later on in the industrial progress of their country.

FLIGHT PIONEERS.



M. PIERRE PRIER.

"FLIGHT" PRIZE SCHEME FOR FLYING MACHINE MODEL MAKERS.

FURTHER to our announcement of last week we now give full particulars of our scheme to encourage scientific model-making by offering small prizes for competition every week. Firstly, however, we would preface the regulations themselves by some general remarks explanatory of our purpose in instituting this competition, which to a certain extent necessarily traverse the same ground as our article last week.

Model-makers of to-day are potentially the pilots and the designers of the flying machines of to-morrow; so that FLIGHT would not be fully serving its purpose as an organ of encouragement in the new movement if it failed to do everything possible to engender progress along the best lines from the very start. There is a very large army of model-makers in England; and, as far as encouragement in the mere making of models goes, there is no need that we should take any particular action to emphasise the interest that we have always shown in this relatively elementary branch of aeronautical study.

But that particular phase of model-making wherein it is our present hope to arouse a more intense interest is the construction and actual use of *scientific* models for the purpose of building up theories and for the orderly collection of useful data. In a word, it is our wish to encourage the science of model-making by directing along definite lines of research the curiosity and enthusiasm of those who merely make models in order to experience the passing pleasure of seeing them fly.

We have always held the view that model-making automatically classifies itself under one of three distinct headings.

Firstly, there is the toy aeroplane, which is essentially built to fly, and the merit of which is measured by the distance, duration, or other desired characteristic of the flight that it accomplishes. Such toys may have no resemblance whatever to actual machines; but, on the other hand, they may be given just as much resemblance as the constructor chooses to introduce or is able to accommodate—for a too close regard to the prototype is often detrimental to efficiency.

Secondly, there is the model that is a scale copy of some actual machine, and the principal purpose of which is to demonstrate high-class workmanship in miniature. It is immaterial in such a model, whether or not it actually flies. In all probability it would be quite out of balance in the air.

Thirdly, there are the models belonging partially to the second class, but primarily constructed with the object of experimentally investigating some problem of aerodynamics. Such models can vary in simplicity right down to an ordinary sheet of note-paper, which can scarcely be described as a toy, but is certainly capable of demonstrating many phenomena in flight in a better way than can be done by many more elaborate models.

It is this third class of model that we particularly wish to encourage and for which our prizes are offered. Of course, we do not mean merely paper models, although we have mentioned the paper model as an example in order to show that this field of work is open to every class of investigator and need not necessarily involve the expenditure of money. The research will, however, demand a fair amount of time, and the interest must be centered on other things than the mere pleasure of making the model fly. In a word, the model must be flown with the definite object of demonstrating some particular fact, and every possible test must be made to bring evidence in support of the deductions that are drawn.

Careful note must be taken of the conditions under which tests are conducted, and careful measurements be made of the results of the tests. All these things are very simple and very straightforward, but they cannot be accomplished without thought; and it is just that studious attention to detail that we wish to cultivate.

Now as to our prizes, these, as we mentioned in the first instance, are not intended to be an incentive for the sake of their intrinsic value, but rather as an acknowledgment of our readers' work. Every week we are prepared to make a total award of up to 10s. in value for the best contributions submitted for this competition, and the competition will go on indefinitely as long as we consider that it is serving a useful purpose. It will commence at once, or at any rate as soon as we receive any contribution that is suitable to start the ball rolling. As far as the eligibility of contributions for this competition is concerned, we intend to give a

practically free field in order that the many suggestions and half-developed ideas that have been put forward in our correspondence columns during the past two years may be collected in an ordered form and be developed to their logical conclusion. It is open to a competitor to originate a new point worthy of investigation or to take some point to which attention has already been drawn and to work the matter out in his own way.

The essential feature of all contributions for this competition must be that they shall have been carried out with a definite intention of proving some specific point. It will not invalidate the contribution if the result of a particular series of experiments affords a negative answer to the self-imposed question. In other words, it will be considered just as useful to prove that something will not happen under certain conditions as to have proved that something else will happen, provided always that the basic assumption was reasonable and that its significance was recognised by the experimenter.

We do not mind how simple or how elementary the experiments may be, provided that they are well done of their kind. As time goes on, it is only natural to suppose that the contributions to the competition will reach a higher standard than at first. Even then, however, it will still be open for anyone to submit the results of an experiment of a very elementary character, if the point raised has not already been covered by the contributions already published. But these detailed explanations will be unnecessary to those who have appreciated that our purpose is to encourage our readers to build up, by their own research, a science of aerodynamics based on modern experiments.

There is, however, one point that we should like to emphasise before we go further, which is that the lucidity with which the object and the results of the experiments are presented in the competition will count very considerably in assessing the awards. In this we take perhaps an arbitrary position, for good results are good results always; but we maintain that the utility of the results and of knowledge generally is largely measured by the ability with which they are presented to the world.

Moreover, facility of expression is one of the surest indexes of a developed mind, and it is the habit of logical thought and reasoning that we should like our competition to cultivate as much as anything. We have always appreciated the great quantity of correspondence that reaches this office, especially because its tone has always confirmed the writer's desire to give freely to others any information that he has found out for himself. All who have studied the history of the conquest of the air must have been struck by the manner in which this same *esprit de corps* permeated the ranks of the early pioneers. It should be so, and happily it is the same to-day among all those who are interested in the development of flight.

In conclusion should be added a few words about the method on which we shall conduct this new scheme. In order that we may have as much latitude as possible to encourage everyone, we have decided initially to award marks for the contributions, instead of selecting certain contributions as the winners of definite half-crown prizes. By adopting a system of marks we shall be free to show encouragement, if necessary, to more than one competitor each week. Moreover, a few marks won on several occasions can be added together until they reach a prize value. The lowest prize aggregate on this basis will be 100 marks, and every competitor who obtains 100 marks in this way will receive a voucher valued at 2s. 6d., which will be accepted in payment, by any of the firms advertising in FLIGHT, for goods bought from them. Money prizes, as such, will not be awarded under any consideration, but if there is some object applicable to the subject that a competitor desires and is unable to obtain from the above-mentioned sources, we shall be pleased to meet his wishes where possible. Needless to say, in this, as in every competition, the Editor's decision must be regarded as final.

The "FLIGHT" Prizes for Models.—RULES.

1. A description of any model, or series of experiments with models, made for the purpose of ascertaining some definite

information of scientific aeronautical interest, is eligible for this competition. Actual models must not be sent.

2. Descriptions must be written under a title indicative of the salient point at issue.

3. Descriptions must be written on *foolscap* paper and on *one side only*. [Descriptions submitted in any other form are not eligible.]

4. Every sheet of paper must bear the sender's name and address, also the title of the description.

5. Illustrations must accompany descriptions whenever possible.

Illustrations must always be drawn on a separate sheet of paper; they may be executed in pencil if preferred, in which case they will be re-drawn for reproduction where necessary.

Drawings must be carefully lettered and numbered to correspond with any references in the description.

They must also bear the sender's name and address and the title of the description.

6. Lucidity of expression will be accredited in the competitor's favour.

✱ ✱

The Vogue of Flying.

DAILY the vogue of flying is becoming more pronounced, and such custom bodes still more rapid progress for the great movement. At Brooklands, Hendon, and elsewhere a roll of the passengers, if published, would be a little astonishing to the general public; and a little idea of the spread of the cult may be formed from the visit on Easter Monday of M. Tabuteau and Mr. Herbert J. Thomas to Badminton House, Wilts, whither they had flown on a Bristol biplane from Filton, Bristol, at the invitation of the Duke and Duchess of Beaufort. Alighting in a field close to Badminton House they were received by Lord Lonsdale and cordially welcomed by the Duke and Duchess and their house party. An exhibition

7. Marks will form the basis of the award. When any competitor obtains an aggregate of 100 marks for his descriptions, a voucher will be issued to him that can be exchanged for goods to the value of half a crown with any of the advertisers in **FLIGHT**.

8. We are prepared to award up to about 400 marks every week, but reserve the right to publish or withhold publication of any submitted descriptions, whether marks or no marks are awarded, without acknowledgement or stating a reason.

9. Descriptions must not be written as letters to the Editor, nor need they be accompanied by a covering letter as they must necessarily be fully explanatory in their own text.

On the top of the first sheet of the description the words "FLIGHT prizes for models" must be written.

10. Descriptions should be addressed to:—

"FLIGHT,"

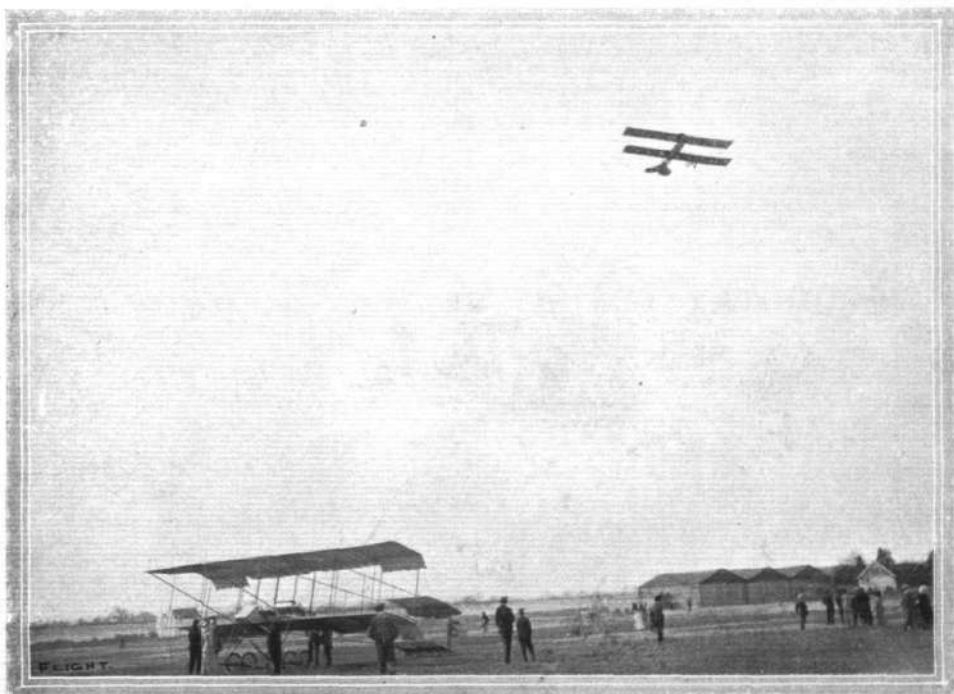
(Model Prize Section),

44, St. Martin's Lane,
London, W.C.

✱ ✱

flight having been made by M. Tabuteau, a series of trips was made with a number of the guests present, in addition to the host and hostess and their children, the Marquis of Worcester, and the Ladies Blanche and Diana Somerset. Amongst others who thus obtained their "air baptism" were Countess Nora Lützow, the Hon. Cyril and Mrs. Ward, the Hon. Henry Lygon, General and Mrs. Brocklehurst, and Mr. M. H. Chaplin.

Unalloyed pleasure was the verdict of one and all at their novel experience, and it was with regret that the time came in the evening for Mr. Tabuteau and his companion, Mr. Thomas, to return by the way they had come to Bristol, where they landed without incident to the delight of a big holiday crowd.



"Flight" Copyright.

FLYING AT BROOKLANDS ON EASTER MONDAY.—In spite of the high wind which prevailed at Brooklands, Mr. Pixton, on the Roe biplane, put up a good flight for the Endurance Prize, securing it with 1h. 27 m. 32 s. In our photograph Mr. Pixton is seen during this flight, the machine on *terra firma* being one of the famous Bristol biplanes.

LONDON TO PARIS NON-STOP BY AEROPLANE.

TRULY can it be said that aviation history is being made at a marvellous rate, and it would seem that record cross-Channel flights are to mark the periods of that history. The year 1909 saw the famous flight of M. Blériot from Calais to Dover. In 1910 the late Hon. C. S. Rolls made the double journey from Dover to Sangatte and back without a stop, while 1911 is likely to be remembered as the year in which Pierre Prier improved on the records by flying from London to Paris without breaking his journey. It is true the late Mr. J. B. Moisant succeeded in covering the space between the French and English capitals last year by way of the air, but it will be remembered that he made numberless stops—albeit they were unwilling ones—on the way, while his journey occupied a good many days owing to difficulties encountered on this side of the Channel. Not only is M. Prier's trip a record for cross-Channel work but it is also a world's record for a cross-country flight from point to point. That it should be possible for an aviator to set off at practically a moment's notice on a journey of 250 miles without making any very elaborate preparations is an extraordinary commentary upon the progress in aviation which has been accomplished during the past year. It is, in fact, what happened, for although the aviator had been thinking over the possibility of making such a trip for six weeks, the recent spell of bad weather had necessitated the temporary abandonment of the project. On Wednesday of last week, however, M. Prier was giving M. Norbert Chereau a trial run on one of the new Blériot monoplanes at Hendon, when it was suggested that the conditions were favourable for a flight to Paris. The suggestion was acted on forthwith. M. Prier had his cross-Channel flyer brought out, got into readiness, and by a quarter-past twelve was in the air. When he had travelled only a little way, however, he found it was practically impossible to keep

up the pressure in his petrol tank, and so returned to the aerodrome for this to be remedied, after having been in the air for about half an hour. At 1.30 p.m. the adjustments were completed, and at 1.37, to be exact, M. Chereau timed the aviator away for his journey to Paris.

Following a route which had been carefully prepared beforehand on a roller map, which was arranged in front of the pilot, the aeroplane winged its way round the suburbs on the north side of London, and then working eastward of the Metropolis, followed the Thames to Chatham, turning southward when past Canterbury, to Dover. From here, M. Prier steered across the Channel to Cape Grisnez, on reaching which point he turned and followed the coast to Boulogne, arriving there at 3.15, as he was more familiar with the landmarks on the route between there and Paris. Continuing his journey onwards to Abbeville and Beauvais without incident, he crossed the French capital, which was so enshrouded in mist that even the Eiffel Tower was not distinguishable, and sighting Issy, came down in front of the Blériot sheds there at 5.33 p.m., being warmly welcomed by M. Louis Blériot himself. Throughout the journey the Gnome-engine Blériot behaved splendidly, and M. Prier had no difficulty in finding his way by the aid of the special map and a compass. When Hendon was left the wind was blowing slightly from the north-east, but at Dover it had veered to north-west. The only difficulties experienced were due to the mists passed through in England and a bank of fog encountered near Beauvais. The actual time taken for the trip of 250 miles was 3 hrs. 56 mins., so that the average speed maintained was in the neighbourhood of 64 miles an hour. During most of the journey M. Prier was at a height of about between 2,000 and 3,000 feet.

HENDON TO BIRMINGHAM BY AEROPLANE.

WHEN the Birmingham Aero Club invited Mr. Grahame-White to open their Exhibition at Bournville on Easter Monday, it was hardly hoped that he would select the air-route, instead of the train, to travel to the function. Such a send-off for the Show was, however, determined upon by him, and had it not been for fog and adverse winds, the trip of about 115 miles would probably have been made in the originally anticipated time—about 7 hours—instead of 12½ hours, as it turned out. The crowd of visitors who persevered in waiting at the model village of Bournville, with full confidence in Mr. Grahame-White's ability to overcome all obstacles, were well rewarded for their faith at 6.35 p.m., when the aviator, after making a half circle of the Exhibition ground, duly descended upon the allotted space by a fine *vol plane*.

Starting at 5.45 a.m. from Hendon on his 50-h.p. Gnome-Farman, he made straight for Harrow, from whence he would have the railway as a guide. By the time he had reached Fenny Stratford, about 48 miles out, a thick mist had so bothered him that he deemed

it wise to alight for a time, this being accomplished, damaging a rudder, which was soon set right.

Before the mist had lifted, however, the wind had begun to assert itself, and he therefore determined to remain a bit longer on *terra firma*. Not until 4.15 did he attempt to re-start, when he got well away, taking the route past Blechley and Towcester, where great greetings were shouted to him from the racecourse visitors. He was soon after passing Dunchurch, and when in sight of Coventry he thought it would be safer to take in more petrol, for which purpose he descended for a few minutes. Resuming his journey, upon reaching the outskirts of Birmingham he again came down at Sparkhill in a football field, for information as to the direction for Bournville.

Without further difficulty he was then able to steer direct over the four last miles to his destination, where, as already noted, he arrived in fine form at 6.35, alighting, in spite of the awkward surroundings of houses and trees, in perfect style.

CROSS-COUNTRY FLYING BY MR. GRAHAM-GILMOUR.

MR. GRAHAM-GILMOUR, whose sensational flight on Boat-race day marked him out as one of the most daring of British airmen, has been indulging in further exploits. On Wednesday, April 12th, at 7.30 a.m., he left the British and Colonial Aeroplane Co's Flying School on Salisbury Plain in the Bristol military biplane with which he flew to the Boat-race, and taking with him Mr. Gordon England set out for Yeovil. In passing over Salisbury he unfortunately mistook the railway lines and followed the wrong track. Finding after he had flown about 30 miles that he had completely lost his reckoning, he decided to land at the first large country house he came to and inquire his whereabouts. This turned out to be Fryern Court, near Templecombe, the residence of Mr. Norris, where Mr. Gilmour and his passenger were cordially welcomed and entertained to breakfast.

After breakfast, Mr. Gilmour determined to call *en aeroplane* upon his friend, Mr. Farquharson, and with his passenger he flew to Blandford, and after a short rest went thence to Eastbury Park. After spending the day there he took Mrs. Farquharson for a flight over the Downs in the evening, and then, with Mr. England again up headed for Martock, *via* Blandford and Templecombe. The wind had freshened by this time, however, and after battling for a time with the awkward breeze, the airmen were practically blown to earth at Henstridge Station. They landed safely, and, having made the machine secure, went to the local hotel for the night.

At six the next morning, Mr. Gilmour went up alone, the field in which they had landed being too small to permit of his taking off with a passenger. By arrangement, therefore, he picked

Mr. England up a mile away and went on to Martock, *via* Sherborne, reaching there about 7 a.m., making a few circles over the town, to the great delight of the inhabitants, before landing. Later in the day he made several exhibition flights, and was invited to Earl Poulett's house, Hinton St. George, for dinner. Accordingly he started for his dinner engagement at 7 p.m., taking a lady passenger with him, rising on the way to a height of about 1,300 ft. Mr. Gilmour at first intended to land in Earl Poulett's park, but finding that the landing would be difficult on account of trees and golf-bunkers, finally determined to effect a landing on the lawn in front of the house. This he managed to do, but the lawn was so smooth that the machine continued to travel for some time, and carried away a light iron fence, which was completely demolished. The machine, however, was scarcely injured at all, only a wire or two and the lower member of the tail being damaged, due to the great strength of construction and good workmanship of the Bristol biplanes. In order that the mechanics who were attending him might not miss their holiday, Mr. Gilmour decided not to continue further.

Mr. Gilmour appears to be safer in the air than on the ground, for in motoring back to Salisbury he had the misfortune to get his car into a ditch, it turning turtle. He had to make the best of a bad job, and therefore got inside and slept as best he could until the early morning, when the services of a passing traction engine enabled the car to be hauled on to the road again. It proved to be practically uninjured, and Mr. Gilmour was able to proceed home without further incident.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 11th inst., when there were present:—Mr. R. W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Prof. A. K. Huntington, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Sir Charles D. Rose, Bart., M.P., and Harold E. Perrin, Secretary.

New Members.—The following new members were elected:—Harry Morse Hewitt, Herbert Valentine Landsberg, Samuel Thomas Medlicott, Norman Scott Percival, Hugh Richard Preston, Percy Warden.

Airship Pilot's Certificate.—The following Airship Pilot's Certificate was granted:—

6. Lieut. R. A. Cammell, R.E.

Passenger Carrying by Unqualified Aviators.—The attention of the Committee having been drawn to the practice of passenger carrying by aviators not holding an aviator's certificate, the following regulation was passed:—

"Any aviator carrying passengers on an aeroplane without having obtained an aviator's certificate will render himself liable to have the granting of his certificate postponed for such period as the Committee of the Royal Aero Club may determine."

Presentation to the Club.

Mr. F. H. Anstruther Gough Calthorpe has kindly presented to the Club a framed picture, "The only authentic Sketch of the Ascent of the Vauxhall Balloon with Mr. Cocking's Parachute."

Balloon Contests at Hurlingham.

The following dates have been fixed for balloon contests at Hurlingham:—

Saturday, May 27th, 1911.

Saturday, July 15th, 1911.

The particulars of the contest will be announced later.

Members of the Royal Aero Club will be admitted to the



PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

Scottish Ae.S. (Model Aero Section) (3, STANMORE RD., GLASGOW)

OWING to the rainstorm on Saturday last, the competition for duration under the auspices of the above club had to be postponed until to-day (Saturday), when it will take place at Ibrox, competitors to meet at Bellahouston Park Gate, Paisley Road, at 3.15 p.m. prompt. A good entry is already assured. Any non-member is at liberty to compete. The prize is a silver cup for the model remaining the longest time in the air. Entrance fee 6d., and all information from Mr. R. M. Glenesk, 200, North Street, Glasgow.

Sheffield Model Aero Club (35, PENRHYN ROAD).

A SPECIAL general meeting of the above club will be held at Lawson's Sheffield Café, West Bar, on April 26th, at 8 o'clock p.m. All members and those wishing to join are requested to be present at this meeting, when interesting and important business is down for discussion. Some model aeroplanes will be on view.

Wandsworth Aero Club.

AT the general meeting held on Wednesday last, it was decided to take a workshop situated very near the Common at 23, Chatham Road. As the place has to be decorated, &c., subscriptions and entrance fees should be sent in as soon as possible. Intending members should communicate immediately with F. C. Lauder, 13, Spencer Road, Wandsworth, S.W.

Women's Aerial League (227, STRAND, W.C.).

THE Women's Aerial League are making a new departure, or Thursday and Friday, June 1st and 2nd, they are organising performances of Maeterlinck's "Monna Vanna" translated by Alfred Sutro, at the Royal Court Theatre for the members of the

Hurlingham Club free on the above dates on presentation of their Royal Aero Club membership cards.

Gordon-Bennett Aviation Cup.

The race for the Gordon-Bennett Aviation Cup will be held on Saturday, July 1st, 1911, and the Committee of the Royal Aero Club will make its decision as to the venue very shortly.

The following Countries, each represented by three competitors, will take part in the contest:—America, Austria, France, Germany, and Great Britain.

The Committee of the Royal Aero Club will select the three representatives of Great Britain. Entries from British aviators will be received up to 12 noon on May 1st, 1911. Intending competitors are requested to send in their names on or before that date. Entries must be accompanied by a remittance of £20, which amount will be returned should the entrant not be selected.

"Daily Mail" Second £10,000 Prize.

Entries for this Competition close at 12 noon on June 1st, 1911.

The entrance fee is £100, payable in one sum or as follows:—

£25 by 12 noon on June 1st.

£75 " " July 1st.

Late entries will be received up to 12 noon, July 1st, 1911, in which case the entry fee will be £200.

Copies of the rules and entry form can be obtained from the Secretary, Royal Aero Club, 166, Piccadilly, London, W.

European Circuit.

Full details of the conditions governing this contest can be obtained from the Secretary, Royal Aero Club, 166, Piccadilly, London, W.

Prizes amounting in all to over £17,000 are offered. The contest starts from Paris on June 18th and traverses France, Belgium, Holland and England and back to Paris. The entrance fee is £40 up to May 30th, 1911, and double that amount until June 8th, 1911.

HAROLD E. PERRIN,

Secretary.

166, Piccadilly.

League and their friends. This will be the first production in English of this play, and the many lovers of Maeterlinck's work will no doubt wish that they could be present. Membership of the League should help them in their desires. A strong cast of well-known players is promised.

SCHOOL AERO CLUB.

Arundel House School Ae.C. (15, ARLINGTON ROAD, SURBITON).

SOME remarkable flying has again been accomplished by R. F. Mann with his improved Mann monoplane No. 31, similar in type to the one recently exhibited at the Aero Show. On Friday, April 14th, the machine in question kept the air for no less than 70 seconds, thus making the best duration record with which the writer is acquainted. Durations of a minute were obtained again and again. Quarter-mile flights were performed on half-a-dozen occasions, and although the club aerodrome at Hook is over 1,200 ft. in length, the model landed in trees at the far end no less than three times. Quite a number of spectators watched the flying (and incidentally the tree climbing) with unusual interest.

On Saturday last the Mann monoplane was very much in evidence at the competition held at Acton by the Aero-Models Association. R. F. Mann secured two out of the three prizes offered, viz.: 1st prize, Open Duration Contest, and 2nd prize, Youths' Longest Flight Contest. In spite of a very lively wind and a strange ground, he gave some clever exhibition flights after the competition, in the final of which the model performed the almost unprecedented feat of flying completely out of the aerodrome into a neighbouring cemetery, a distance of considerably over 1,000 ft. R. F. Mann is now the winner of no less than seven prizes for model-flying in public contests, a fact of which the members of the club are very proud.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

The flying at Brooklands on Easter Monday was limited during the afternoon to a couple of lengthy flights by Mr. Pixton on the Avro biplane, built by Messrs. A. V. Roe and Co. The breeze was fairly strong and treacherous during the time the motor racing was on, and Mr. Pixton was the only one to venture aloft, he making one flight of about an hour's duration, and the second of about half an hour, and he consequently took the £30 prize for aggregate flight. During these trips Mr. Pixton occasionally attained a very good height, at one time being in the neighbourhood of 1,000 ft. above the ground. The second prize was won by Mr. Gustav Hamel, who went up at ten minutes to six on his Blériot monoplane, with the intention of beating the world's record for height. Although the wind was still pretty strong, he climbed steadily until an altitude of 6,300 ft. had been reached, when he was obliged to give up the attempt, and came down in a long spiral glide, having been in the air for 19 minutes. Mr. Sopwith brought out the Martin-Handasyde monoplane, but in landing tipped the machine over on one side and damaged a wing. The Macfie biplane was out, and carried a passenger during a straight flight, while Mr. Eric G. England on a Bristol and M. Ducrocq on his Henry Farman biplane made several short demonstration flights in the evening.

Avro School.—On the first Thursday of this month Pixton brought out the new Avro biplane, fitted with 30-h.p. Green, for the first time, intending to try for a three-hour flight. No sooner had he started than the wind sprang up to 25 m.p.h., backed by a snowstorm, and so he returned to the more congenial atmosphere of his hangar after a few minutes.

On the following Saturday, in spite of a stiff wind, there was quite a large attendance, so to minimise their disappointment as much as possible Pixton determined to try a show with the Avro biplane. Starting at the Byfleet end, he rose in a wind that was blowing up to 35 m.p.h. This lifted him up and down bodily, and he landed at the Paddock end, as he was unable to turn owing to the wind being too strong, so the machine was wheeled back.

On the Sunday morning the wind was 15 m.p.h. Lieut. Beatty, Conway, Jenkins, and Pixton had the Avro biplane out giving each other flights, and the two former made straight flights alone.

Tuesday afternoon, the 11th inst., the Avro was first out after the rough spell, as usual. Pixton did a few circles, and then handed the machine over to a new pupil, Lieut. Parke, R.N., he having had instructions to only roll for a start. To everyone's astonishment, he opened the engine full out, making a series of flights, and, landing by the Paddock, turned round and flew back, this being his first time on an aeroplane.

Wednesday, the 12th, Lieut. Parke, at his third attempt, kept up for half a circle on the Avro biplane in rather a stiff wind, greatly to his instructor's surprise. While over the sewage farm, his sleeve caught the switch, the machine diving down before he was able to bring her nose up again, the skids sticking into the ground. Fortunately, only the tip of a skid was broken and a propeller.

On Friday and Saturday Pixton was carrying passengers on the Avro biplane. Sunday he took up the Avro biplane 1,500 ft., *vol planing* down from that height.

On Monday, 17th, Bank Holiday, the wind was very tricky, almost a calm at times, and blowing 23 m.p.h. at others. Pixton was first out on the Avro biplane, and others followed, but they found the wind too uncomfortable. Pixton, therefore, had the field to himself. His first flight was nearly half-an-hour, and his second nearly an hour. Considering he had only a 30-h.p. Green, the performance was certainly a very meritorious one, and says a great deal for English piloting, design, and workmanship. The sooner manufacturers turn their attention to light, cheap machines that will fly with little power the sooner will aeroplaning become increasingly popular.

Laffan's Plain.

On Tuesday evening last week Capt. Burke made several short flights. On the 13th both Capt. Burke and Mr. de Havilland were out doing some excellent flights in the afternoon, and Mr. Cody was carrying a goodly number of passengers. Late in the afternoon the latter accomplished one of the finest glides he has ever done, gliding for over a mile from a height of 1,000 feet.

On Thursday, the 14th, the three machines were again at work, the wind, however, proving a little too strong for the smaller craft, although Capt. Burke and Mr. de Havilland were able to carry out two short flights in the early afternoon. The Cody biplane flew in its usual form in spite of the unfavourable weather conditions, and two passengers were also carried for separate flights. One of them, Mr. Ernest C. Bucknall, weighed 20 stone, bringing the weight of passenger and pilot up to 36 stone 3 lbs.

In the early part of the evening Capt. Burke and Mr. de Havilland were again in the air and remained flying on and off until 6.40.

Mr. Cody took a flight over Aldershot at a height of about 1,500 ft. which he brought to a termination by switching off the engine at a distance of a mile and a half from the Laffan's Plain hangar. A steady glide was made with a broadside wind, but it was found necessary to descend with a sharp dive as Mr. Cody had somewhat underestimated the remarkable gliding capacity of the machine.

London Aerodrome, Collindale Avenue, Hendon.

Blériot School.—On Tuesday, the 11th, though a strong wind was blowing, Mr. Prier took the two-seater out for a trial. Next day was a busy day at the school; in the morning Mr. Prier, with Mr. Norbert Chereau as first passenger, made a long flight, reaching an altitude of 800 ft., and finishing with a fine *vol plané*. Then Mr. Prier took up as passengers, in succession, Mrs. Jones, Messrs. Jones, Champion, Petitpierre, Grabette and Salmel, one and all being highly delighted with their trips. At 1.37, Mr. Prier took the helm of his single-seater with the intention of starting for Paris, and after a hearty send-off from all present, he was soon out of sight; later, news came to hand that he had safely reached his goal, and this brilliant feat is fully described in another part of this issue.

Mr. Hamel went off to Brighton on his Blériot at 1.57.

In the afternoon, the wind having abated, school work was resumed, Messrs. Champion, Henderson and Salmel circling the grounds, whilst Messrs. Abercromby, Psalty, Parr and Jones were indulging in some rolling practice.

During Thursday, which was windy, Mr. Nathan, a new pupil, had his first theoretical lesson in the hangar. Friday was another busy day, Mr. Petitpierre, in the absence of Mr. Prier, having charge of the pupils. Mr. Champion was making some good right hand turns.

On Saturday morning, after Messrs. Psalty, Parr, Nathan, Champion and Jones had indulged in a little practice, unfortunately the wind got up and stopped their progress.

On Easter Monday tremendous cheers came from the 5,000 people present at Hendon, when Mr. Prier, who had hurried back from Paris, took up as passengers Mr. Bertram Mills, the famous whip, and Mr. Henderson. Messrs. Henderson and Abercromby during the day were at work on the school machine, but owing to the wind getting stronger the other pupils did not venture on a start.

Grahame-White School.—Apparently the morning of Wednesday last week was fairly calm, but Clement Greswell, being first out on the Grahame-White School Farman, found the air unusually "flukey." This, however, did not greatly interfere with the day's instruction.

Having made a trial on the same machine of a new four-bladed Chauviere propeller, Greswell gave over control to Messrs. Martin and Ridley Prentice, who made very good flights. The wind rising, flying was abandoned until after lunch. Hubert then flew high in the course of a 15 min. flight, but had to come down as the conditions were rather trying. Work was again resumed at about four o'clock, Ridley-Prentice making five circuits in a fairly strong breeze. Meanwhile, Hubert started off with Mr. Maasdorp as passenger on the military Farman for a long flight. Ascending to an altitude of 1,000 ft., he flew in all directions over the surrounding country, descending *en vol plané* at the end of half an hour.

Clement Greswell on the Gnome-Blériot and Martin on the Grahame-White "Baby" biplane, were both flying at the same time that Hubert and Prentice were up, the four making a very impressive sight as they wheeled round the aerodrome at different altitudes.

In anticipation of qualifying for his "brevet," Ridley-Prentice put in a good practice flight of 20 minutes including two right-hand turns, keeping at a very respectable altitude. He immediately set out and made the necessary qualifying flights for his certificate in very excellent style, making his ten right-hand turns quite steadily and apparently easily. Ridley-Prentice is the second pupil to obtain his "brevet" in England under the new conditions, his fellow pupil, Lewis Turner, also of the Grahame-White school, being the first, and both are, as far as can be ascertained, the first aviators in the world to win their certificates using a Gnome rotary engine.

A long flight by Mr. Grahame-White with a passenger on the military Farman terminated the day's proceedings.

Thursday was a very windy day, and no flying could be ventured upon.

In spite of the fairly gusty wind that prevailed all day on Good Friday there was excellent flying, some 2,000 people assembling at the aerodrome to witness the sport. Unfortunately, and for a wonder, the day did not pass without a certain amount of *bois casse*, as three smashes occurred. Champion, one of the Blériot pupils, was making a rather more acute right-hand turn than he had

usually done when the inner wing tip touched ground bringing the machine heavily to earth. As he himself said, "he found himself standing on his ear," but otherwise intact. The Grahame-White Military Farman suffered a good deal of damage but happily no injury resulted either to the pilot or his passenger. The other smash occurred to one of M. Chanter's pupils. After two attempts to run along the ground in a straight line, the pupil succeeded in keeping the machine on a fairly accurate course. Having the machine running "all out" the tail rose rapidly with the result that the machine executed a very slow and gentle somersault.

All throughout the day Messrs. Claude Grahame-White, Clement Greswell, Martin, and Hubert were flying on their respective machines, while the late pupils, Turner and Ridley-Prentice, made several circuits in a breeze that could have been none too comfortable for pilots of such comparatively little experience. At about 4 o'clock Mr. Grahame-White ascended on the school Farman, and carried out all manners of hair-raising evolutions, handling the machine as only Grahame-White can.

Saturday was very windy, and although a large crowd assembled at the aerodrome flying did not commence until about 5 o'clock when Mr. Grahame-White brought out his "Baby" biplane, and piloted it round the ground for three or four circuits in order to keep the people, who were getting rather impatient at waiting, in good temper. Clement Greswell also put up a good flight on the Gnome-Bleriot, getting up to a height of close on 1,000 ft.

It was not until the evening that flying commenced on Sunday, the first one out being Mr. Paterson on one of the Grahame-White "Baby" biplanes, on which he flew to a great height during a trip of 20 minutes' duration. On his descent Greswell set out on the Gnome-Bleriot, and climbed until an altitude of close on 3,000 ft. was reached. Switching off he made a superb spiral glide to earth. Right through Sunday night, and until Mr. Grahame-White's departure on Monday morning, the mechanics were working their hardest on the machine which he intended to fly to Birmingham. By a quarter to six the machine was completed, and after a trial spin for the purpose of making adjustments, Mr. Grahame-White set right off for Bournville, near Birmingham, where he had promised to open an exhibition of models.

Not long after his departure Ridley-Prentice brought out the school Farman, and with Mr. M. W. Dixon in the passenger seat set out for a flight of several circuits of the aerodrome. Before taking up aviation, Ridley-Prentice was assistant to Mr. Dixon in his position of district auditor of Suffolk, and it is rather interesting to note that his late superior should be his first passenger. Mr. J. V. Martin had rather an exciting experience, being taken up as passenger by his wife on the school "bus." However, after two or three straight flights, she flew a couple of laps very excellently, landing well, too. Mr. Martin and Mr. Compton Paterson made

some good flights during the morning on the Grahame-White "Baby," while Greswell put in some excellent work on the Gnome-Bleriot.

At about 8 o'clock news came over the 'phone that Mr. Grahame-White had descended at Penny Stratford on account of the fog, and that in landing he had damaged one of the rudders.

Ridley-Prentice immediately went off at top speed on his motor cycle, with a spare strapped on the back.

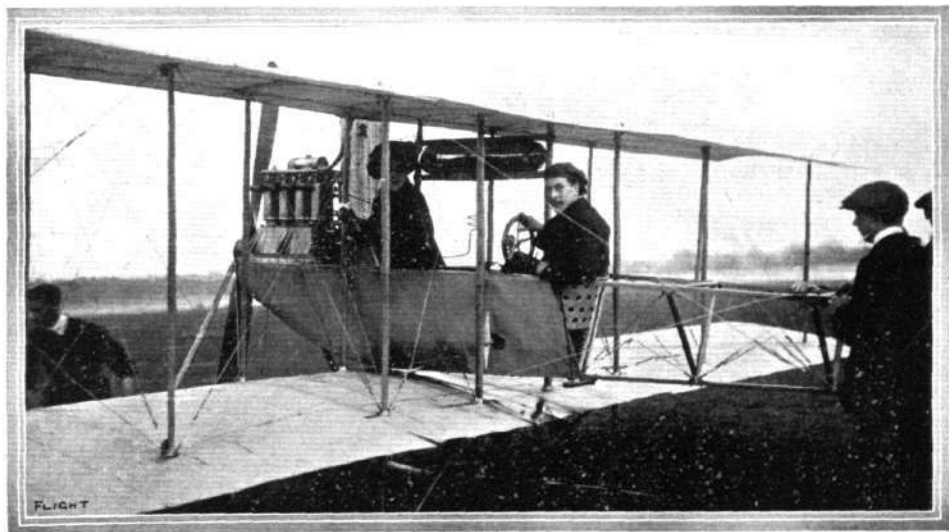
Passenger flights were in great demand, in fact, so many were booked that in three cases money had to be returned because of the impossibility of giving them all. The Grahame-White school pilots had a very busy day, being in the air incessantly, both with and without passengers. Over 4,000 people were present, as well as 250 motor cars and cycles.

Valkyrie School.—Mr. Hawker, of the Royal Military Academy, Woolwich, underwent his first lesson on Wednesday of last week and showed excellent promise. Capt. Fulton, of the Army Air Battalion, then took the school machine in hand for the first time also and got into the air at once; another lesson and he should pass the tests for his 1911 certificate. The Valkyrie designer then followed with "Valkyrie II.," the big passenger carrier, and was experimenting with a new design of front plane and some new adjustments. As a result of a lot of experimental work which has lately been going on, it is likely that still another type of Valkyrie will shortly make its appearance, its most important features being an extremely low gliding angle and high weight carrying capacity.

At 8.30 a.m. on Thursday, Mr. Chambers was at practice on the school machine, making numerous straight flights. The wind afterwards was too much for school work, but the school instructor took Type A (single-seater) machine up, and made a series of very pretty flights, in which sharp right-hand turns and *not plant* descents were carried out with perfect precision. Late in the afternoon Mr. Chambers was out again, and also Mr. Benson, the latter pupil coming on very rapidly. The day finished with more demonstrations on the part of the Valkyrie pilot.

A very busy day was experienced on Friday. Messrs. Chambers, Valentine and Benson kept the school machines full up, and the school pilot made a number of flights with a new Type A machine. His flights with both hands held above his head were the feature of the day. There were fully a thousand spectators watching, and no less than six times did he fly past them for considerable distances with perfect steadiness, holding both hands high above the controls. The high stability qualities of the Valkyries cannot be emphasised too much. Captain Morrison afterwards ascended as a passenger, and the day closed with some interesting demonstrations of figures of eight, in which the right-hand turns were very sharp.

Saturday was too windy for pupils almost all day, but Mr. Chambers got in a little practice, and a number of flights were made by the school pilot.



Mr. Pixton, just about to carry a lady passenger for a short trip, on the new Roe biplane, with which he so successfully flew at Brooklands on Easter Monday.

"Flight" Copyright.

Pupils were again debarred from participation in the sport on Easter Monday by reason of the wind, but the school pilot ascended four times, and made some sixteen circuits of the aerodrome very steadily. During the past week four more pupils have joined, and the Valkyrie School now claims to be the largest in the country.

Salisbury Plain.

ON Tuesday of last week the wind dropped and with the change in the weather conditions the Bristol School was soon actively at work again. Mr. Pizey was out and flying at a good height in the afternoon while M. Jullerot was busy instructing pupils. Messrs. Turner and Philpot took turns in the machine by themselves, and the former for the first time made some good straight flights while Mr. Philpot contented himself with rolling. On Wednesday morning the weather still further improved, and Mr. Turner was first out, making an excellent flight of about seven miles. Mr. Philpot then got into the machine and had some practice, while Mr. Pizey also made a flight. Mr. Graham-Gilmour, who had arrived on the previous evening, set out at half past seven to fly to Yeovil accompanied by Mr. Gordon England, and details of his trip are given elsewhere. Mr. Pizey took up a passenger for the first time and made a very fine flight, ending with a *vol plané*, both he and M. Jullerot continuing flying at intervals until the evening although the treacherous breeze in the afternoon caused work to be abandoned for some little time. Mr. Fleming,

one of the pupils, was making straight runs while Mr. Turner went for a trip round Fargo Camp and Stonehenge. Thursday was also fine at first and M. Jullerot was at work early on the school machine, but a blustery breeze came up and stopped further flying until the afternoon, when Mr. Fleming made two circuits of the flying ground. Using one of the Bristol biplanes, Mr. Eric England succeeded in making the necessary tests for his pilot's certificate, being observed by Lieut. Conner. Friday morning was also fine, although misty, and this caused both M. Jullerot and Mr. Turner to lose their way while flying over the ground. In the afternoon the wind was very treacherous and the time was spent in erecting a new Bristol biplane. In the evening, however, Mr. Pizey and M. Jullerot were out flying with their pupils. Saturday was a fine frosty morning, and Mr. Pizey set the ball rolling by taking up Mr. Turner as passenger, M. Jullerot quickly following his example. It was well they took advantage of the early conditions, as after breakfast gusty winds prevented any further outdoor work until the evening, when M. Jullerot and Mr. Pizey were both up at heights of well over a thousand feet. All the pupils availed themselves of the fine weather on Monday, and several of them showed what extraordinary progress they had made in a very short period, Messrs. Fleming, Turner, and Philpot all making solo flights of from 20 to 30 mins. in very good style. In the afternoon flying was out of the question, owing to the rising wind, but in the evening M. Jullerot put in a good flight, which was witnessed by Capt. Fulton.



BRITISH NOTES OF THE WEEK.

New Army Advisory Committee.

THE following officers and experts have been selected by the War Office to constitute the Technical Reserve Advisory Committee on Aeronautics:—

Chairman—Brigadier-Gen. F. Rainsford-Hannay, R.E., Director of Fortifications and Works.

Representing the War Office: Brigadier-Gen. G. F. Ellison, C.B., Director of Organisation, and Brigadier-Gen. L. E. Kiggell, C.B., Director of Staff Duties.

Representing the Air Battalion: Maj. Sir Alexander Bannerman, Bt., R.E.

Representing the Army Aircraft Factory: Mr. Mervyn O'Gorman.

Representing the Royal Aero Club: Messrs. A. Ogilvie, R. W. Wallace, and C. Grahame-White.

Representing Lord Rayleigh's Research Committee: Mr. R. F. Glazebrook, C.B.

Representing the Aeronautical Society of Great Britain: Colonel J. D. Fullerton (retired).

The secretary of the committee is Mr. R. Lyon.

New Air Battalion in the Army List.

LAST week for the first time the new Air Battalion, with headquarters at South Farnborough, appeared in the Army List. The establishment of officers is:—In command, Brevet-Major Sir A. Bannerman, R.E., Acting Adjutant, Capt. Broke-Smith, R.E.; attached, Capt. Fulton, R.F.A.; Capt. Burke, Royal Irish Regiment; Capt. Maitland, Essex Regiment; and Capt. Carden, R.E. Lieut. R. T. Snowden-Smith, Army Service Corps, has also been appointed to the corps.

Fast Trip from Brooklands to Hendon.

ON Friday of last week Mr. Gustav Hamel set out to fly from Brooklands to Hendon, and succeeded in doing the trip in 17 mins. as against 20 mins. 29 secs., which was the best time made in the recent competition.

Shoreham to Eastbourne.

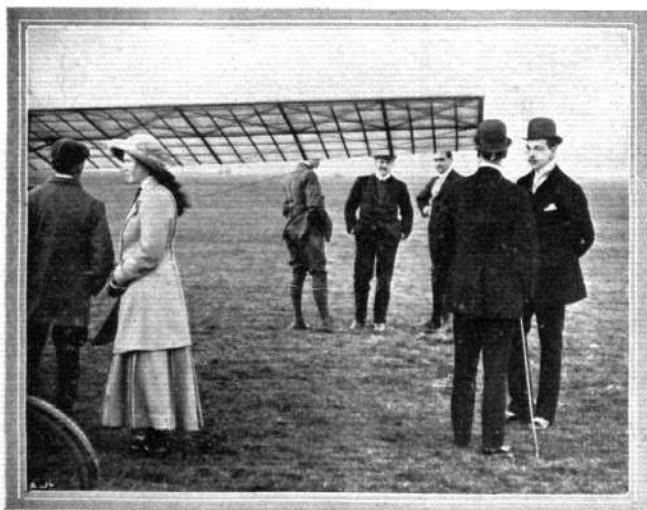
ON Saturday afternoon strollers along the promenade at Eastbourne were somewhat surprised to see an aeroplane overhead. It proved to be Mr. O. C. Morison on his Blériot monoplane, on which he had flown over from Shoreham. After circling once or twice above the sea-front at Eastbourne, the aviator decided to come down in Devonshire Park. He, however, failed to notice some electric light wires, and these, catching the machine, caused it to capsize. The monoplane was very badly damaged in its fall, but beyond being very much shaken Mr. Morison was not seriously hurt.

Hendon to Brighton and Half-way Back.

ABOUT the same time that M. Prier left Hendon on his way to Paris, Mr. Gustav Hamel prepared his machine for a trip to Brighton and back. He succeeded in covering the 56 miles to London-by-the-Sea in 2 minutes under the hour, and after a short rest he started to return to London. When at West Grinstead, however, his supply of lubricating oil gave out, and darkness coming on before a further supply could be obtained, he was compelled to stop there for the night.

Bristol Aeroplanes for Russia.

Two biplanes of the Bristol military type, built by the British and Colonial Aeroplane Co. for the Russian Government, were tested at Filton, near Bristol, on the 12th inst. Taking with him Capt. Dimitri Alexandroff, M. Tabuteau made one or two extensive cross-country flights, landing each time with a fine *vol plané*. The machines were fitted with 70-h.p. Gnome engines, and succeeded in rising to a height of 300 metres within 5 mins.,



King Manoel is interested in the aeroplanes at Brooklands.

just half the time stipulated in the contract. Capt. Alexandroff accepted formal delivery of the two machines, while six others, also for the Russian Army, were tested on the following days.

Any old Aeroplanes for Sale?

It does not strike one that it is over dignified for the British Army authorities to be picking up aeroplanes second-hand—yet that would appear to be what is going on, judging by Col. Seely's statement in Parliament last week in reply to a question from the Marquis of Tullibardine, as to whether a second-hand Howard Wright had been bought at the recent Aero Show. Col. Seely denied the purchase as having been effected at the Show, but confessed that one had been purchased second-hand. Possibly this machine may be quite the latest, but for many obvious reasons it would help things forward a good deal more if the most up-to-date new machines were looked for first-hand from the makers.

Aviation at the Douglas Celebrations.

IN connection with the Douglas Jubilee Celebrations, the Committee has definitely decided to substitute an aviation display for the abandoned motor car race, and engagements have been entered into with Mr. Geo. Barnes, who will use Humber machines, and Mr. Maurice Ducrocq, who will take his Farman racing biplane to the Isle of Man, and also a Nieuport monoplane. Both of the aviators are to attempt to race the steamer "Ben-my-Chree" round the Island.

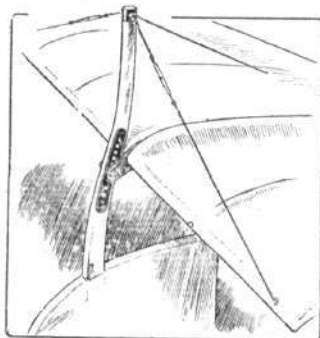
A Flying Race to Brighton.

AN extraordinary commentary on the strides made in aviation is the flying race from Brooklands to Brighton which is announced to take place this (Saturday) afternoon, the first and second prizes being £80 and £50 respectively. The prizes will be awarded for the fastest flights, and the competition opens at 2 p.m.

Grahame-White, Blériot, and Maxim Co.

ALTHOUGH a large number of shares were applied for by 800 of the public, the minimum number of shares specified for sub-

scription in the prospectus, we understand, fell short by a few shares. Under these circumstances the directors have determined not to go to allotment but to return subscriptions. We are glad to learn, however, that another prospectus is shortly to be issued, and



"Flight" Copyright.

Sketch illustrating the manner of adjusting the attitude of the leading plane on the Valkyrie racer.

we hope that provided the terms are still of a sound character, this will be supported still more generously. There is plenty of scope in the rapidly-developing industry for several good construction companies run upon sound commercial lines.



LEBLANC BEATS SPEED RECORDS.

USING a 100-h.p. Gnome-engined Blériot, M. Leblanc, at Pau, on the 12th inst., succeeded in improving on his own speed records for several distances. The figures, as well as the old ones, are given in the table below; and it will be seen that, although the world's record for 5 and 10 kiloms. was bettered, Leblanc was outside record at the 20th and 30th kilom., but was inside again at the 40-kilom. mark. All the old figures were to the credit of Leblanc, except that for 100 kiloms. which was made by Nieuport.

New figures.	Old figures.	New figures.	Old figures.
kils. m. s.	m. s.	kils. m. s.	m. s.
5 in 2 41 ...	2 44 78	40 in 22 12½ ...	22 12 58
10 „ 5 30½ ...	5 30 92	50 „ 27 41½ ...	27 48 70
20 „ 11 8½ ...	11 4 78	100 „ 54 55½ ...	59 16
30 „ 16 41½ ...	16 38 31		

In the first quarter of an hour 26 199 kiloms. were covered, in half an hour 53 424 kiloms., and in one hour 108 424 kiloms.

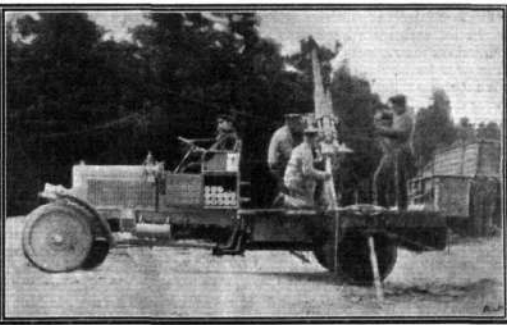
AIRSHIP NEWS.

"Deutschland II" reaches Dusseldorf and has a Mishap.

LEAVING Oos on the 10th inst., the Zeppelin liner "Deutschland II" passed over Carlsruhe, Heidelberg, and Darmstadt, and eventually reached Frankfurt, where it was anchored for the night. On the following morning it started off with thirteen passengers on board, and going by way of Mayence, Bingen, Coblenz, Bonn, Cologne, Mullheim, and Neuss, it arrived at Dusseldorf, after being in the air for six and a half hours. It was piloted during the trip by Dr. Eckener. When the airship was being taken out of its shed on the 14th inst., an unfortunate accident occurred, the propeller and steering-gear on the starboard side of the ship being considerably damaged through coming in contact with the side of the building.

"Parseval VI" in Commission Again.

HAVING been completely repaired, the dirigible "Parseval VI" by way of a trial trip sailed over from Bitterfeld to Johannisthal on the 10th inst. The voyage lasted three hours, and there were thirteen passengers on board the airship.



ARTILLERY EQUIPMENT AGAINST AIRCRAFT.—The latest quickfiring gun for the German Army mounted on a motor chassis.

FOREIGN AVIATION NEWS.

The Record for Height with Passenger.

It is a curious fact that in the list of world's records, the name of Verschaeve stands against that for height (accompanied by passenger) with 428 metres, whereas Renaux, in winning the Michelin Grand Prix, had to climb 1,455 metres to get to the summit of the Puy de Dome. It appears, however, that the F.A.I. is unable to credit Renaux with this figure, as his machine did not carry a registering barometer.

Marseilles-Algiers Race.

OUR French contemporary *L'Aero* announces that so far they have received fifteen entries for the event they are organising from Marseilles to Algiers. The British industry is represented by a Bristol biplane as well as a monoplane of the same make. Among the other entries are a Voisin and a Dufaux biplane, three Blériot, one Morane, one Parent, and other monoplanes.

Pau to Poitiers.

WITH the intention of flying to Paris in a single morning, Naval Lieut. Conneau set out on the 11th inst. from Pau on his Blériot monoplane. He came down after flying for an hour and three quarters at Libourne, where a stop of three quarters of an hour was made. The journey was then continued to Poitiers, where the rising wind rendered it advisable to remain. This section of the journey occupied two hours and a half, so the net time for the 420 kiloms., which separate Pau from Poitiers was 4 hrs. 15 mins.

Fatal Accident to Lieut. Byasson.

THE French Navy has lost a valuable exponent in the art of flying in Naval-Lieut. Byasson, who met with a fatal accident while flying in the valley of the Chevreuse on Friday of last week. The unfortunate officer had paid a good deal of attention to the use of aeroplanes for naval purposes, and had made a good many excellent flights on his Maurice Farman biplane. Last September he had a bad fall while flying, but completely recovered from its effects. When the fatal accident occurred he was making his way back to the aerodrome at Buc, and was in the neighbourhood of Croignieres, when the machine suddenly darted down from a height of about 100 metres. The cause of the sudden descent is unaccountable, and it can only be surmised that it was due to the aviator making some false manoeuvre.

A Clement Monoplane.

A NEW monoplane, built entirely of metal by the Clement-Bayard firm, is expected to shortly commence its trials at Issy.

The Fabre Hydro-Aeroplane Wrecked.

THE end of the Fabre hydro-aeroplane, of which so much was expected at the recently concluded Monaco motor boat meeting, was an inglorious one. The machine made its first appearance on the 11th inst., but after indulging in a few hops ranging up to 500 metres, M. Fabre decided to postpone his further experiments to the following day. Then the conditions were very little better, and in the end the machine was caught by the wind and blown on to the rocks, where it was completely wrecked, the pilot escaping with a ducking.

Trying for the Deutsch Prize.

IN an attempt to win the Deutsch Prize, the aviator Frey, mounted on his Morane monoplane, left Issy on the 12th inst., and flying over Juvisy and Melun he went on past Meaux and Senlis to Vidannee, just by Chantilly, where he decided to come down, having covered 167 kiloms. Nieuport, who is also entered for the prize, flew on the 14th inst. from St. Germain to Montesson, where he was obliged to land owing to the lubrication of his motor going wrong. He was accompanied on his journey by Lieut. Maillols.

Another French Officer Killed.

ALTHOUGH not so well known as many other French officers who have taken up aviation, Captain Tarron, of the Engineers, who met his death on Tuesday, has given a good deal of attention to experimental work in aviation, and it is very definitely stated that some modifications which he had made in his machine with a view to improving its stability was the cause of his accident. He had been taking part in the military flying experiments between Orleans and Satory, and had flown back to his headquarters at Villacoublay, when, in descending by means of a long spiral glide, the machine suddenly capsized and fell to the ground, the airman being thrown out from his seat and killed instantly.

Latham Back in France.

MR. HUBERT LATHAM arrived back in Paris on Wednesday of last week, having returned from the East Indies by the mail boat "Le Tonkin."

Aviator Saved by His Passenger.

STARTING for a trip from the California aerodrome at Nice, accompanied by an English passenger, Dufour, after flying his Voisin biplane over the sea for some time, got into difficulties with his machine, which made a sudden descent to the surface of the water. This placed the aviator in an awkward predicament, as Dufour could not swim. His companion, however, made up for the deficiency, and managed to keep both afloat till help arrived.

Cross-Country Flying on an R.E.P.

USING his R.E.P. monoplane, Captain Chaunac, on the 11th inst., succeeded in flying from Buc to Chartres and back in a hour and a half. During his trip his height was mostly in the neighbourhood of 500 metres.

Flying By the Light of the Moon.

ON the evening of the 12th inst. Dourfu created somewhat of a sensation in Nice by appearing over the town in his Voisin biplane. He had been able to pilot his aeroplane from the California aerodrome by the light of the moon, which was shining brightly. In the afternoon he twice made the trip from Nice to Antibes and back, on each occasion being accompanied by a passenger.

Pau to Bordeaux.

LEAVING the Pau aerodrome just before 12 o'clock on Monday morning, Lieut. Malherbe flew over to Bordeaux where he landed at the Croix d'Hins aerodrome. He reported that he had found the winds very treacherous at Arcachon where he had to land for a short time.

Nice to St. Maxime and Back.

LEAVING his headquarters at Nice on the 9th inst., Vidart piloted his Deperdussin monoplane to St. Maxime, 80 kiloms. away, the greater part of the trip being made over the sea. On the 12th inst. he flew back again to Nice, passing over Cannes and Antibes on the way.

Lavaur to Cahors on a Blériot.

MOUNTED on his Blériot monoplane Gilbert set out on the 10th inst. to fly from Lavaur to Cahors, but owing to the cold he was obliged to descend at Montauban, where, after obtaining refreshment from a friendly farmer, he made a fresh start and completed his 120 kilom. trip to Cahors.

Vedrinnes at Narbonne.

DURING last week Vedrinnes was doing a good deal of cross-country flying. On the 10th inst. he flew from Carcassonne to Narbonne in 25 mins., while on the following day he covered a 50 kilom. circuit in the neighbourhood of Narbonne, passing over Coursan, Salles, St. Nazaire, Ville Daigne, Canet, and Montredon.

Preparing His Case.

BY way of being able the better to conduct the defence of Mr. Maurice Farman in the actions brought by a group of French farmers for damage done to their crops and cattle by the school aeroplanes continually flying over them, M. Imbrecq, Mr. Farman's advocate, last week was for some time flying over the fields and beasts, making careful notes of the effect upon them when passing over, both at high and low altitudes. After his experiences, and subsequent examination of the grounds, he is quite confident of victory for the aeroplane in the French courts. The claims of the plaintiffs certainly appear to be somewhat far-fetched to hold good in any European court of justice.

Doings at the R.E.P. School.

AMONG the visitors at the R.E.P. School at Buc on Saturday last was Captain Wood, who is taking charge of this branch of Messrs. Vickers Sons and Maxim's enterprise, and he was carried for a lengthy trip on one of the machines. On the following day he was also in the air and rose to a height of 400 metres, while Bussan made a flight of an hour and a half.

More Breguets for the French Army.

A MILITARY commission visited La Brayelle Aerodrome on the 12th inst. with the object of taking over two new Breguet biplanes built for the French Army. The specification stipulated that the machine should be capable of flying in a wind blowing 8 metres per second and it should attain a speed of 86 k.p.h. and carry a useful load of 230 kilogs. These tests were easily surpassed, a speed of 92 k.p.h. being attained although the wind was blowing 14 metres per second while the useful load totalled to 264 kilogs.

A Long Flight by Hanriot.

At Rheims on Saturday Hanriot *père* took the Comte Dallincourt for a flight of over an hour, and then Lieut. Boncour for half an hour's flight. Meantime the Chief Instructor at the School, Lenfant, was flying for about 40 kiloms. over the country.

Cross Country on a Caudron.

USING one of his biplanes René Caudron, accompanied by Duval, on Sunday flew from Crotoy to Paris-Plage, where arrangements had been made for the machine to be on exhibition.

Renaux at La Rochelle.

ON Sunday Eugene Renaux made several trips on his Maurice Farman biplane, accompanied by a passenger, over the town of La Rochelle and also over the Isle of Ré.

Prince Henry of Prussia Flying.

ON the 10th inst. Prince Henry of Prussia made, with Herr Euler, a flight of 10 kilometres on a biplane constructed to meet the requirements of the Grand Duke of Hesse, who is taking an active interest in flying.

Curtiss Biplanes for German Navy.

ACCORDING to a report from Berlin, the German Naval authorities have ordered from Mr. Glenn H. Curtiss a couple of biplanes similar to those which he and McCurdy have been experimenting with in rising from and landing on the sea and in landing on the deck of a warship. It is understood that Mr. Curtiss will himself demonstrate the capabilities of the machines during the coming summer at Kiel.

Flying with Three Sisters.

ON the 14th inst. the Belgian aviator, Lanser, made a fine performance accompanied by his three sisters on his biplane. He left Hasselt at 22 minutes past six, and flying over Tirlemont and Louvain reached Cortenberg, where he was obliged to land for petrol, at 25 minutes to eight. Starting again at two minutes to nine he flew on to Berchem, by Brussels, where he landed 20 minutes later. In the afternoon he flew over the city of Brussels.

Kiewit to Brussels.

ACCOMPANIED by Leon de Brouckere, Lanser, on the 10th inst., flew from his aerodrome at Kiewit-lex-Hasselt to Brussels, covering the distance of about 100 kiloms. in 1 hr. 25 mins.

Belgian Military Aviators.

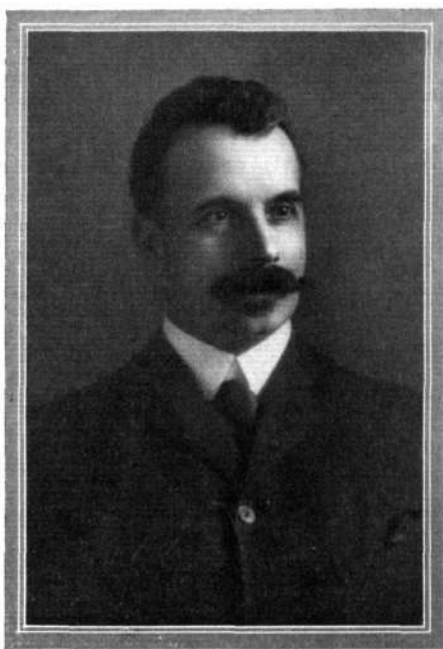
LEAVING the Kiewit aerodrome on the 13th inst., the Belgian military aviators, Lieuts. Nelis and Lebon, on the Farman biplane belonging to the Army, flew over to the Beverloo Camp, where they landed for twenty minutes, and then returned to Kiewit. On the following day Chevalier de Laminne flew with Lieut. Nelis to Liege, stopping *en route* at Orp le Grand. In the afternoon the return journey of 100 kiloms. was safely made, this time with Lieut. Nelis at the wheel.

Another German Circuit Competition.

THE Society of German Aviators is busy with the organisation of a new circuit competition confined to German built machines. It is proposed to start from Berlin and proceed *via* Magdeburg, Munster, Dusseldorf, Cologne, Cassel and Dessau, and so back to Berlin.

The South German Circuit.

THE date of the South German Circuit has been decided upon as May 20th to 28th, and leaving Baden-Baden, the competitors will progress *via* Friburg, Mulhouse, Colmar, Strasburg, Carlsruhe, Mannheim to Frankfurt where a meeting will be held.



Mr. J. T. R. Laurendeau, the well-known Canadian sportsman, who has done so much to encourage aviation in the Dominion.

A Canadian Pioneer.

PROMINENT among those who are taking an active interest in aviation, and endeavouring to give it a fair start in Canada, must be reckoned Mr. J. T. R. Laurendeau, who after giving a good deal of attention to various problems in connection with aviation during the past few years, has purchased three Blériot monoplanes. One of these is fitted with a Gnome engine and the others with Anzani's. Arrangements have been made by which Mr. St. Croix Johnstone, who recently secured his pilot's certificate at Hendon, will pilot the machines.

Mr. Laurendeau owns the Ile Gros Bois, situated about two miles below Montreal, in the St. Lawrence River, and it is his intention to erect hangars and repair sheds there, and so convert it into an aerodrome. It would make an ideal flying ground as it is as level as a billiard table. There is some possibility of Government experiments being carried on there this summer, as Mr. Laurendeau has placed it at the disposal of the military authorities.

In aviation matters Mr. Laurendeau is one of the most prominent men in Canada at the present time, and apart from the activities mentioned above, he owns a large balloon, and has rendered financial assistance to several young inventors of Montreal. In addition to his interest in flying, Mr. Laurendeau is one of the leading horsemen of the Dominion.

✪ ✪ ✪ ✪

THE EASTER AVIATION MANŒUVRES IN FRANCE.

DURING the Easter Holidays, the French military aviators carried out several interesting manœuvres. On the 13th, Lieut. Conneau set out for Paris, although the weather was anything but favourable. He was obliged to land at Baugency, but was soon going again, and arrived at Orleans at half-past nine. There a storm detained him until half-past five in the afternoon, when he re-started, eventually reaching Villacoublay at 7 o'clock. On the same day, acting under orders from General Roques, five military officers, including Capt. Eteve, Lieut. Menard, Lieut. Binda, Lieut. Cammerman, and Lieut. Lucas all on Farman biplanes, and accompanied by a passenger, left Satory with the object of going to Chartres, Orleans, Etampes, and back to Satory. Lieuts. Lucas and Binda succeeded in reaching Chartres, but Capt. Eteve was obliged to come down at Nogent le Roy, and completed his journey to Chartres on the following morning. On the 14th, Capt. Eteve and Lieut. Binda continued their way to Orleans, where they made a

reconnaissance, and were afterwards joined by Lieut. Cheutin and Lieut. Menard. The manœuvres were to have been continued the same evening, but the large crowd which gathered to see the start obstructed the ground to such an extent that, after Lieut. Cheutin had damaged his aeroplane in trying to avoid the crowd when getting away, it was decided to postpone the further operations until the following day. Then Lieut. Menard flew back to his headquarters at Villacoublay, Capt. Eteve and Lieut. Binda returned to Versailles, making a stop at Etampes on the way, while Lieut. Lucas also returned to Versailles but by a different route. On the 13th inst. Lieut. Remy started from Chalons with the intention of flying to Besancon, but was obliged to land at Chaumont. The next day he continued on his way, and after a flight of a couple of hours landed at Besancon. Leaving Mourmelon on Saturday morning, Lieut. Delage flew over to Vincennes, while on the 12th inst. Lieut. Cheritier flew from Chartres to Satory in an hour.

FLYING IN INDIA.

It will be remembered that at the end of November last The British and Colonial Aeroplane Company appointed a Commission, consisting of Mr. Farnall Thurstan (Manager), Mr. Henry M. Jullerot as chief pilot, and Mr. Bendall and Mr. Webb as mechanics, to visit India to undertake experiments in flying there. Mr. Jullerot, who was the most active member of the Commission, at any rate as regards actual flying, has just returned and has given his experiences to a correspondent:—

"We went first of all to Calcutta, and had a very warm reception indeed from the civil and military authorities. The Indian newspapers were very cordial, particularly as we were Bristolians, as the proprietor of *The Times of India*, the largest newspaper in Calcutta, Dr. Reed, is himself a Bristolian, and altogether we could not have started in more favourable circumstances. Shortly after our arrival we were introduced to the Commander-in-Chief of the Indian Army, Sir O'Moore Creagh, who was keenly interested in our mission, as was Sir Douglas Haigh, Chief of Staff. The Commander-in-Chief at once suggested our preparing a lecture on "Aviation in its Military Aspects," and my first public appearance in Calcutta was when I delivered this lecture to several hundred officers in the hall at Fort William, Calcutta.

"By January 6th our machines were ready, and having obtained from both the civil and military authorities permission to make use of the Maidan racecourse for flying, we commenced operations. The Maidan racecourse is probably the finest course in the world, and I shall never forget the sight of it as it appeared on January 6th. There were present the Viceregal Party, Sir Edmund Baker (Governor of Bengal) and Lady Baker, Sir O'Moore Creagh (Commander-in-Chief) and Lady Creagh, and all the chief officers of the civil and military services. The crowd was absolutely a record one. It consisted at the very lowest estimate of 700,000 people, Europeans, Eurasians and natives, the whole population of Calcutta and the neighbourhood having turned out.

As I flew some thousand feet in the air over this dense crowd I could see them covering the ground and swarming in the trees, the only clear part being the green strip of the racecourse itself. I have never heard so strange a noise in all my life as the screaming and yelling and cheering with which these 700,000 people expressed their delight. It made the roar of the engine seem quite insignificant.

"I was using the 'Bristol' military biplane, and I flew from the racecourse over this ocean of heads to Fort William. The fort, seen from a thousand feet in the air, appeared to be a small stone star set in the earth. Passing over the fort I continued my flight in the direction of the cathedral, and then went back to the grand stand of the racecourse, and after a few laps round the course gave an exhibition of more tricky flying such as spiral *vol plans* and the like, much to the delight of the crowd. It was the first absolutely successful flight they had ever seen, and at first they seemed to regard me as a kind of incarnated air-god. Later on, however, they became less overawed, and would come out and look at the machine and sit hour after hour in the hope of seeing me fly.

My first flight was rather short, as the heat of the noonday sun made it impossible to start until fairly late in the afternoon, and the darkness came on so quickly without any twilight, and the mist of the Hoogly river rose so very rapidly just before dark, that the first exhibition of flight had to be somewhat curtailed. Her Excellency Lady Hardinge was kind enough to come to me when I landed and congratulate me upon my flight. She took a very great interest in the explanations I gave her regarding the working of the machine.

"A few days later we were invited to meet the military authorities with the view of participating in a big cavalry concentration in the Deccan. By the good offices of the railway company we were able to get our machines transported in a very short time indeed to the seat of operations, about 1,300 miles from Calcutta.

"From this time I determined to make only passenger cross-country flights. This kind of flying is, perhaps, a little more risky than flying *solus*, but it demonstrates far better the qualities of the machine. The operations at Aurangabad were extremely important. No fewer than ten Generals

attended for the express purpose of making a report on the utility of the aeroplane in military manoeuvres. In company with Captain Brancker I made a large number of cross-country flights for military reconnaissance purposes. Captain Brancker provided himself with a map, which he placed on my back, and a compass and sketch-block, and thus observed the disposition of the opposing forces. On January 16th we made a very big reconnaissance, a cross-country flight lasting 45 mins., and I believe at that time it was a British record for a cross-country flight with a passenger.

"Unfortunately, the following day my petrol was exhausted. Not wishing to be idle I went to an Indian bazaar to endeavour to replenish it, but the stuff they gave me was perfect rubbish, and as a result, although I was able to get into the air, I could get no power out of the motor, and Captain Brancker and I dropped to earth before we had mounted very high. We managed to fall very gently, however, and only damaged the machine very slightly, while Captain Brancker, when I looked to see whether he had suffered injury, was quizzing me through his monocle, which had remained undisturbed in his eye.

"At the end of these manoeuvres we went back to Calcutta, but only for a short time, for we were soon afterwards officially ordered to participate in the Northern Manoeuvres. The Chief of the General Staff especially commanded a Staff Officer from Simla to attach himself to us with Captain Brancker and make a thorough report on the use of aeroplanes in army manoeuvres. We went to Karghpur, which is, I should think, one of the worst spots possible for flying purposes. It was nothing but rocks and jungle. An old polo ground partly covered with bushes was the only suitable place for starting and landing. I succeeded, however, several times with cross-country flights with passengers, travelling 15 and 18 miles each time in connection with the infantry manoeuvres.

"In that part of India I had to struggle very often against very high winds. We started frequently in an absolute calm atmosphere, but as soon as we reached a height of about 1,800 ft. we encountered very strong currents. We came back once from a reconnaissance at a speed of 65 m.p.h., which, as the speed of the machine is about 40 m.p.h., necessarily involved a wind blowing at 25 m.p.h. behind us. Another day, flying at Karghpur, we were completely stationary in the air for the space of at least half a minute. I had to drop carefully for several hundred feet in order to get out of the air current. It was a kind of emotion which I should not like to experience very often, although I do not imagine there was really much danger.

"During the whole of our stay in India we never made use of any sort of hangar. Our machines were erected out in the open, and stayed week after week exposed by day to the sun with a heat of over 100° F., while at night the temperature dropped to the other extreme. In spite of this, however, the wood of the machines was not the least bit affected, and not the least warping took place in any part. I am bringing back with me the old machine which belonged to Captain Dickson, in which you remember he took part in the army manoeuvres in England last year, and which was with me throughout all those demonstrations in India, and although it was in just the same condition in India as it was in England, it was not affected in the least by the change of climate. I can only confirm what I said six months ago before I started—that with a 'Bristol' machine I would go anywhere. I did, and I would do so again, with perfect confidence.

"One great advantage in India is that you can gauge the weather from day to day in a manner impossible in England. It is quite possible to make an appointment for a flight four or five days ahead, knowing perfectly well that the weather will remain settled. If any change in the weather is coming there is always ample sign of it several days in advance. The winds are sometimes very strong, but absolutely regular. The heat is very trying. I never felt the slightest cold while in the air in India, and in fact most of the time I flew in tennis kit.

"From the home point of view the tour was most successful. In so far as India is concerned at present the name 'Bristol' is almost synonymous with aeroplane; in fact, I have been asked the question, 'Do you fly a monoplane or a Bristol?'

THE FUTURE OF THE SCHOOL AERO CLUB MOVEMENT.

By ROBERT P. GRIMMER, Secretary of Arundel House School Aero Club, Surbiton.

My recent article in *FLIGHT*, entitled "A Plea for the School Aero Club," will be fresh in the minds of many readers. In it I outlined the immense national importance of training the coming generation in the principles of aeronautics. The present generation is supremely indifferent to the vast possibilities of the new science, which is destined to have a momentous and far-reaching effect on the future history of the world.

From a commercial as well as from a military point of view air power will mean world power, and woe to the country that slumbers at a time when the factors that decide the fate of nations are being rearranged! Britain only holds the proud position of being the greatest country in the world by virtue of her command of the seas, which have been for centuries the highways of the continents. But sea power, which has been the characteristic of Empire since the days of Carthage, is becoming far less important, and it is my profound conviction that the next half century will see the transit of the world removed to another element.

The present generation can no more realise this than could their ancestors of the Early Victorian period foresee the abolition of the stage coach. Yet there will come a day—certainly not in the immediate future—when the locomotive engine is as much a *rara avis* as is that clumsy vehicle of the forties at the present time.

If the younger generation does not possess more liberal views concerning the possibilities of aviation, England loses for once and all her proud place among the nations. And in England, despite its vast possibilities and huge field of work, the school aero club movement is being ignored.

Not so in France, in Germany, in Austria. M. Gache, who is the devoted pioneer of school aviation in the former country, recently reviewed in *L'Aero* and *La Paule Sportive* several of the articles that I have from time to time contributed to the Press of Great Britain. He says:—

"For football, cricket and other sports England had given the example. Numerous and prosperous have been and are always the clubs. It would seem that in the domain of aviation things might be otherwise, and that the French scholars, having under their eyes the first great aviators, would form also the first school aero clubs. It has not been thus. With their ancient practice of association, at a time when their country had neither machine nor pilot, the young English formed a school aero club, having for its object the study of aerial navigation. That was three years ago." And after urging the French schoolboys to follow in the footsteps of the Arundel House School Aero Club, the writer concludes:—"Now, my young friends, work for your country, for aviation, and for yourselves!"

A number of public meetings followed. The idea was taken up with enthusiasm by the French journals, active support was promised by practically all the manufacturers, school aero clubs sprang up by the score in every Department in the country, and at the present moment a "Fédération Française des Aero-clubs Scolaires" is in course of formation. Inter-club contests are being arranged, and kites, models and gliders manufactured literally by the hundred.

As the founder of the oldest school aero club in the world, I am the recipient of countless letters from the authorities of schools in France asking for information as to our methods and procedure. I am besieged with applications to send messages to be read at public meetings, called together to discuss the subject of school aero clubs. All this is very congratulatory, and I highly appreciate the honour shown me, but I must confess that I would rather see this splendid enthusiasm in my own country. One cannot but admire the strenuous work that M. Gache is carrying out so effectively in France, but one is apt to become a little jealous at times when one surveys the lamentable state of things here.

In Germany and Austria the same movement is developing, and more progress has been made there in three months than we have achieved in the same number of years. In fact, a "Fédération Aéronautique Internationale

Scolaire" has been suggested in order to control the international competitions, which will follow as a matter of course.

In England we possess, as far as I am able to ascertain, some ten or twelve school aero clubs. Why should not these be the nucleus of a "British Federation of School Aero Clubs" on similar lines to the one across the Channel? I am bold enough to suggest the formation of this, and I have been promised the active support of many of our aeronautical firms. The existence of an organised body is essential if we are able to possess any prestige with the Continental Federations with regard to the forthcoming international contests. It should be quite possible to arrange among our own clubs competitions for kites, models and gliders on similar lines to football league meetings, and I am sure these contests would be at least equal in general interest to an average football or cricket match. The finals of these contests should excite even national interest, and they would probably be attended by large throngs of spectators.

Experiments made by the members of the proposed Federation with gliders and models might even lead to new and important discoveries being made. There is still a very great deal to be learned with regard to the aeroplane, and a considerable part of what is now known has been evolved from experiments with models. *Inter alia*, I am convinced that there is a wing shape that would insure perfect and automatic stability. This might well be discovered by even a schoolboy. Again, gliding will eventually culminate in man-driven flight. What vast possibilities are opened here! And last, but not least, the clubs of the British Federation would, I hope, serve as training centres for the new and great profession of aeronautics. I have very good reason to believe that the British firms would offer special facilities to members of the Federation who were desirous of becoming pupils.

Thus, in the course of a few years we should have a generation full of enthusiasm for aviation and determined to maintain the prestige of their country in the air; for only through the medium of the school aero club can Great Britain be thoroughly imbued with the aviation spirit.

The individual aero club is a possibility. My own club—if I may say it—has demonstrated that, and the Federation is equally a possibility. The boys of Britain take a splendid and active interest in aviation. It is their school authorities who are to blame. Unbending and invincible opposition is almost invariably offered to the formation of a school aero club. I have in the course of the last three years received many letters from boys in various parts of England seeking information with regard to the formation of clubs, but the ultimate result has nearly always been the same. The stereotyped excuse of the average principal is that the school sports would be impaired. Personally I am a great admirer (not in theory, but in practice) of football and cricket. But what, after all, is their educational value? And they are not necessarily the only healthy pastimes.

To design a kite, model or glider, a considerable knowledge of physics and mathematics is essential. For its construction one must be conversant with several handicrafts, of which carpentry is not the least; and in the actual flying the invaluable qualities of patience and self-control are brought out in a marked degree. From an athletic point of view the sport is ideal. The experimenter must be a sprinter (especially when a gamekeeper approaches to express his views on kite-flying), a tree climber (the elusive model is fond of trees) and an acrobat—this applies more particularly to gliding.

Let me appeal to the school authorities of this country to lend some support to this great and national movement; and if that is asking too much, at least to withdraw their determined opposition.

In conclusion, I am prepared to give an illustrated lecture on "The Work of the School Aero Club" at any school in Great Britain, which lecture includes descriptions and slides of all our principal machines.

STEERING BY COMPASS.

By R.A. (Retired).

In his article, "Steering by Compass," some time ago, Mr. Graham Davies opens a most important subject, and I propose, in pursuing it, to make a few remarks on his most interesting contribution. In contrasting the leeway of dirigibles and aeroplanes, he introduces the question of resistance, by which I imagine he means side resistance to a wind tending to set a machine to leeward of the course steered. Is this correct? I understand that as the whole body of air is moving, the body resistance of a flyer of any size or shape is immaterial, except in its effect on speed. To take an analogy, an ocean current of 20 knots a day would set a 20 knot liner, a 9 knot tramp, or a glass bottle, equally 20 miles in a certain direction in the 24 hours. However, this is not a great matter, but is interesting as a matter of principle. Of course, one realises that the shorter time the air vessel remains in a particular current, i.e., the greater speed it possesses, the less is it forced out of its course as referred to the earth.

His suggested arrangement for measuring leeway is simple and excellent if his card compass can be relied on to work with the vibration inseparable from an aeroplane. In any case, a glass plate as described, with a "lubber line" across it, would enable a fairly good estimate of the leeway to be made if it were placed close to the spirit compass used for steering. I would suggest as an addition to the steering compass an adjustable arm such as those in use in night marching compasses. The aeronaut could then, after measuring his leeway as suggested, set this arm to the required position, and would only have to keep the compass needle under the arm to be on his course. If arm and compass needle were marked with luminous paint, this arrangement would be as efficient by night as by day. The arm could easily be set by a pedal.

Now I venture to think that the difficulties of aerial navigation have been exaggerated, probably because comparatively very few men have yet taken the same machine across country often enough to get accustomed to its peculiarities and behaviour in different winds. I do not think that a man who is accustomed to make passages in yachts or small sailing vessels by "dead reckoning," would take very long to find his way in the air after a short training. It is a delicate matter for one who has never made an ascent to expatiate on, but I will take the plunge, and set out my ideas for criticism.

What an aviator wants to know in order to go from one place to another in a given time, is the course and the pace he must make through the air in order to make a different course and a different pace (i.e., that required to reach his destination up to time) over the earth. As Mr. Graham Davies shows, he can now, without any great difficulty, get his course and pace over the ground. He can then take a "departure," as they say at sea, with the certainty that, *unless the wind changes*, he will reach his point at a certain time without taking any more observations at all. He knows his speed through the air by his whistle indicator, or other simple means, he has measured his speed over the ground by the Joanneton speed recorder, or the more

simple method of timing himself between two conspicuous points on the earth, and he knows that the difference of the two is the effect of the wind on his machine when kept on that particular compass bearing. The wind, of course, will soon change both in force and direction, and he will find it necessary to alter his course through the air in order to preserve the same course over the ground. His speed through the air remains constant, so he realises that any difference noticed in speed over the ground is due to this altered movement of the medium through which he is moving.

With map and compass in front of him, he will soon get into the habit of noticing every change in the wind, and applying the necessary correction to his course, even though he is so high that he can only recognise towns by their relative size. As his education goes on he will observe that different changes of wind are accompanied by their special phenomena, dampness, squalls, and the like, and he will get more and more independent of his observations of earth. Moreover, I presume that a change of wind of any suddenness would be recognised by a necessary re-adjustment of his balancing planes. This would give a clue to its direction and force. There is still a very big step forward to be taken before our pilot can conduct his vessel to a distant destination when he cannot see the earth at all, but it must be remembered that this would be equivalent to crossing the Atlantic entirely by "dead reckoning," a thing that could never be done with exactitude. If he can navigate a cloudy or misty sky with approximate accuracy so that he gets an observation of the earth, the course correction is comparatively a small one, it is surely all that can be expected. It is suggested that a lead plummet on a length of piano wire might be tried to get an idea of the vessel's leeway in a case like this. It would, of course, hang slightly to windward of the fore and aft line of the air vessel from which it was hung, and by its degree of divergence from that line would give an indication of the force and direction of the wind. One need hardly say it would have to be kept clear of the propeller. Besides this possibility, and the recognition of gusts from a certain direction by the necessary re-adjustment of balance, there is work already begun in the big field of meteorological research which will help the aerial navigator. When the prevailing currents at the different heights are mapped out, and a system of reports of conditions existing from time to time sent by wireless telegraphy from balloons, captive or dirigible, is established, aerial navigation will have few uncertainties to contend with in the opinion of the writer. He ventures to forecast that in a very few years these considerations which we discuss with so much gravity to-day will be considered mere child's play.

[It will be noticed that the expression "leeway" has been used to describe what "drift" would describe more exactly. The reason is that "drift," in its special artillery sense, is used to describe the deviation of a projectile from the plane of departure due to the spin given it by the rifling, and it struck the writer as just possible that the motion of an aeroplane's propeller, whether "clockwise" or counter "clockwise," might have a similar effect which might be very properly described as "drift."]

THE EUROPEAN CIRCUIT.

THE full rules for the European Aviation Circuit which is being organised by the *Standard* of London and *Le Journal* of Paris have now been issued. Up to the present over £17,000 has been offered in prizes, as per the following list:—

The <i>Standard</i>	£2,500
<i>Le Journal</i>	200,000 fms.
The Town of Vincennes	25,000 "
<i>Le Petit Bleu</i>	25,000 "
The Municipality of Liège	40,000 "
The Town of Calais	15,000 "
The Municipality of Brussels	10,000 "
The Town of Spa	10,000 "
The Netherlands Aviation Committee	40,000 "

The competition will start from Paris on June 18th and traverse France, Belgium, Holland and England *via* Brussels, Utrecht, London and back to Paris. Between each of these four points there will be various landing places where the aviators will be obliged to come down in order to be checked, &c. Prizes will be offered for each section of the course as well as for the complete course. The prize money offered for the various sections will be divided among the first twelve aviators, the one securing first place taking 40 per

cent. and the others in certain other proportions down to the eleventh and twelfth who will receive 2 per cent. each. The competition is open to all aviators qualified at the date of the contest by the F.A.I. and using motor driven heavier-than-air machines. Aviators can only compete on a type of machine on which by June 15th next they shall have passed the necessary test to obtain an aviator's certificate. The same pilot must pilot the machine throughout the whole of the course but the machine may be changed, although any substituted machine must be of the same type as that which it replaces. Passengers may be carried, but they may not be changed during the day, and they must not be certificated aviators. Entries, accompanied by a fee of 100 francs, will be received up to May 30th, and double fees up to June 8th. All entrants have the right to withdraw up to June 8th, and if they do so half the entry fee will be returned, the same applying also to all those who actually start. Time alone will be the basis of the classification, the prizes for the different sections being awarded according to the time the machines have taken to cover that section, while the classification will be for the full course, according to the total times added together for the various sections.

Copies of complete rules can be obtained from the Royal Aero Club.

A Four-seated Deperdussin.

ONE of the latest monoplanes turned out at the Deperdussin Works has been designed to carry four passengers. It is fitted

with a 70-h.p. Gnome engine, and at Rheims on the 14th inst. Aubrun was flying on it with a single passenger for 45 mins., while in the evening he flew over to Mourmelon and back.

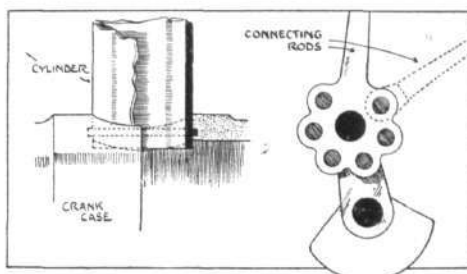
THE ISAACSON ENGINE.

PHOTOGRAPHS and leading particulars of the Isaacson engine have already been published in FLIGHT, and the accompanying detail sketches will, therefore, be of interest to readers on their own account. Special features of this engine are that, although it is of the radial type it is a stationary motor, and although it has a propeller mounted concentrically with the crank-shaft, nevertheless the propeller revolves at half the engine speed.

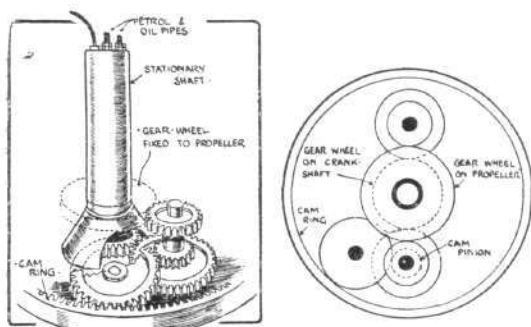
One of the accompanying sketches shows the manner in which the cylinders are fastened to the crank-chamber. The crank-case is a two-part aluminium casting divided circumferentially in the middle and held together by seven bolts. At intervals round the periphery large circular holes are cut to receive the cylinders, which are clamped between the two parts of the crank-chamber. A collar is machined on the lower end of the cylinder wall, and this collar engages with a groove in the crank-case, as shown in the sketch. By this means the cylinders are held in place by the same bolts that keep the two parts of the crank-chamber together.

In the sketch accompanying this latter illustration the method of coupling the pistons to the single crank is shown diagrammatically. One of the pistons is coupled up to the crank by a master connecting-rod having an enlarged big-end, to which all the other connecting-rod big-ends are

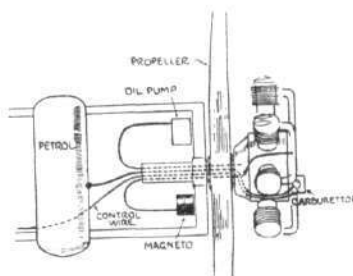
of the stationary shaft, and driven from the propeller boss in a similar manner to the arrangement on the Gnome engine. The distributor is mounted in the crank-case on the carburettor side.



Sketches illustrating the method of fastening the cylinders to the crank-case and the connecting-rods to the crank in the Isaacson radial stationary engine.



Sketches illustrating, diagrammatically, the gear mechanism for driving the half-speed propeller on the Isaacson radial stationary engine. For convenience the perspective sketch is shown with the horizontal shaft in a vertical position.

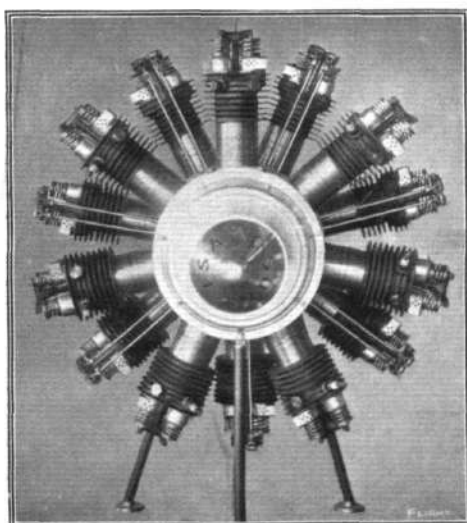


Diagrammatic sketch illustrating the manner in which the fuel-pipes and oil-pipes are arranged on the Isaacson radial stationary engine.

hinged, as shown in the sketch. It will be noticed that the crank is balanced by a revolving weight.

In two of the other sketches the gear mechanism driving the propeller is illustrated also more or less diagrammatically, and, for convenience, with the shaft shown vertically instead of horizontally. The crank-shaft is fitted with a gear wheel that meshes with two other gear wheels on the shafts of which are further gear wheels meshing with a gear wheel on the propeller boss. This intermediate train virtually forms a pair of lay-shafts similar to those used in the gearbox of a motor car, and the normal gear reduction afforded thereby is two to one. An additional supplementary train of gears, operated from one of the lay-shafts, drives an internally toothed ring, on the exterior of which are the cams that operate the valves.

Yet another sketch shows (diagrammatically) the pipe work and the principal wiring in the general arrangement of the Isaacson engine on an aeroplane. As the only revolving member is the propeller, which is driven at half speed, it is possible to have a stationary external shaft as well as a stationary engine, and it is through the stationary shaft supporting the propeller that the principal pipes are led to the engine, as shown in the sketch. The petrol is fed from a tank under pressure to a White and Poppe carburettor attached to the cover of the crank-case, and seven induction pipes of equal length distribute the mixture to the cylinders. Oil for lubricating purposes is pumped under pressure to the cranks and up the connecting-rods to the gudgeon-pins. The oil pump and the magneto are disposed on opposite sides



The 100-h.p. Isaacson engine.

PROBLEMS RELATING TO AIRCRAFT.

By MERVYN O'GORMAN.

(Concluded from page 342.)

72. There are many persons who may be described as hypothetical inventors—persons who do not invent anything, but who convince themselves that in this "mechanical age" such or such a difficulty will assuredly be overcome before long. They then treat the problem as solved, and proceed to build a tower on this tottering basis of supposition. Such persons will say that "Automatic stability with the gyroscope will, of course, soon come along," and then it is easy to suppose an aeroplane that alights as easily and as slowly as a dirigible. But what is this automatic stability? Is the aeroplane fitted with it to be able to remain in mid-air if overtaken from behind by an air column which moves forward at a velocity in excess of that of the machine, and strikes it "solid"?

In a water analogy, which is good enough for present purposes, is the toy boat to remain at the top of the bath after the supporting water has been drained out, simply because there are gyrostats which can move its rudders about? The answer is in both cases, simply no.

73. On the other hand, safety is to be found when the aeroplane is moving sufficiently fast to get clear of the overtaking column before the ground has been touched in its fall, or when the aeroplane carries an engine sufficiently powerful to accelerate it up to the requisite velocity for flotation upon the new moving air which composes the column. No one is quite prepared to say that no such overtaking column of air exists in nature—for the fact is that airmen find "holes in the wind" and find that though their engines are working full bore, the whole machine drops—and to explain this, one of two causes must exist, either an overtaking blast with a short steep front, or an actual down current. In neither case is the "automatic stability" so-called, going to secure the machine from fall. In both cases a large margin of power, very high speed and high potentiality for accelerating will substantially diminish the risk.

74. In a country where 40 m.p.h. winds are the usual maxima, a man should have a chance of being safe if he can quickly accelerate the aeroplane to 60 m.p.h. Such considerations as these point to the increased speed of the practical machine, while the natural demands of learners will develop, for perfectly still days, a slow, low-powered machine on which air experience can be easily got by waiting patiently for the opportunity. In this the forecast in para. 56 is being repeated from a different point of view.

75. I therefore own myself converted by Lanchester to his declared view that in the air safety lies in speed, and that the elimination of danger from flying is dependent on two factors—(1) The evolution of flying grounds as flat and perfect as a moderate cricket field, so that alighting at speed is certain to be safe. (2) The development of a speed habit as an instinct of self-preservation in the air, though the departure from our present disposition in favour of slowness for safety, will doubtless require a long period of growth and development.

As the future aeroplane would probably have a gliding angle of one in eight or one in seven, the one lesson which it behoves the airman to learn is the proper height from the ground at which he must restart his propeller at the end of a glide down, so as to diminish his angle of incidence. The learning of this corresponds to acquiring the art of bringing a big ship truly alongside the dock.

76. Landing Devices.—To be able to start and land is perhaps as important as to be able to balance, since one can never balance the machine without starting, nor start the machine a second time without having safely landed. In the early days, French machines were fitted with wheels for landing, while the Wright machines saved both weight and wind resistance by using skids only. They had, however, to be launched off a special trolley which was not available away from home; the inconvenience of this was soon learnt and they were altered.

Nevertheless, it was the Wright Brothers who brought home to the rest of the world the value of skids for spanning unevenness in the ground; and Farman ingeniously combined skids and wheels in a way which has remained practically unchanged till to-day.

77. The Wrights on their return to America obviously profited by their European experience, for the latest Wright

aeroplane has wheels on the skids very much after the European style. The wheels run and keep the skids clear of the ground when the ground is level, and diminish the friction at starting, but the skids are present to bridge over any groove or ditch, as well as to take any bump severe enough to carry the wheel springs to the limit of their travel. One of the duties of the landing frame which may be overlooked, is to take side pressures in the event of a flyer alighting across the wind. In some measure the indiarubber device and the triangular guide on the Farman type allows for this, but the contingency is more completely provided for in the "castor" mounting of his wheels arranged by Blériot. The latter, however, suffers on bad ground by having no skid. One difficulty due to the heavy strains on the landing chassis is its weight, amounting to well over 100 lbs. in a Farman, for example. The members are in compression, which generally means weight unless some pneumatic system can be introduced by which the energy of the blow can be taken up by allowing a piston to do work while travelling through some considerable distance, as, for example, by forcing air or a fluid through a fine hole.

Such an arrangement is far better than a pneumatic cushion which is resilient, because any bouncing tends to increase the trouble with the inertia of the wings, which imposes alternating stresses upon their guys.

78. When a flyer alights, the wings, of which the inertia is considerable, are suddenly arrested in their downward path, and the strains on them are at once reversed. In the case of monoplanes it is usual to erect a triangulated pillar or "cabane" high over the centre of the landing chassis above the level of the wings, and to carry wires from the apex of this to support the wings and so preserve them from their tendency to break off with the shock (Fig. 13).

If flying were to be done under the conditions for which we may look in the future, i.e., with proper smooth alighting grounds, an advantage could be obtained by keeping the wings very low and near the ground, because the air cushion formed between the wings and the ground would appreciably reduce the shock, both on the wing shoulders and the whole machine, provided the alighting were effected on an even keel.

At present the combined landing frames and wheels seem to give rise to much regrettable wind resistance. The only means of reducing this appears to be by raising the propellers sufficiently to get a ground clearance and by making water-tough studies of wheel skid arrangements for minimum head resistance, bringing the whole as far as possible within a "stream line form" such as may constitute the body.

79. To make things at the same time light and strong is the acme of engineering design, and the practice of such work is a pleasure, not a burden, but it is only possible when the stresses and strains allowable can be ascertained. Aeroplanes travelling horizontally in still air or in air of constant velocity are subject to efforts, most of which can be calculated with the utmost nicety and checked from the horse-power of the engine consumed at the desired speed. The exceptions to this are the steering stresses and vibrations which may be imported because of the possible cumulative effect, especially if syntony should occur with the vibration period of a vital part of the machine. It is also impossible to calculate the stresses to which a landing chassis may be subjected, either when starting on rough ground or on alighting, and therefore we are limited to using each other's experience.

80. In this example of the landing chassis, therefore, I am convinced of the necessity of adopting the heroic plan which was suggested to me by some friend whose name I cannot recall, but I think Mr. Lanchester, of running a machine some thousands of miles over rough fields and ditches with the intention of breaking it, if it is to break.

81. In the air an aeroplane is loaded in the direction opposite to that in which it is loaded when on land, and accordingly the simple way of imitating the distribution of the loading is to invert the machine, support its centre of gravity and load the wings with a material like sand according to the estimated distribution of load and a factor of safety. Under these conditions certain spars will be in compression and certain wires in tension, and it will be possible to note the deflections and the amount of bending.

The entire wing will bend—irregularly perhaps, because wood is not a homogeneous material like steel—and the amount can easily be measured in the ordinary way.

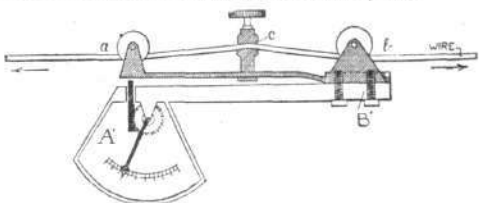


Fig. 18.—Tautness meter for measuring the pull in a wire without cutting it.

82. **Appendix.**—As regards the tension in wires, it may be worth while to give details of a simple instrument, a Tautness meter, for measuring the tension of aeroplane wires in position without cutting or hurting them or altering the stress to which they are being subjected.

It is to be understood that the reason for making such measurements is *not* to be able to cut down the size of wires, for such wires should all work with a good factor of safety, say about five to ten in any case, but for the purpose of adjusting all the tensions so that the wires are working equally, and that the planes may be, when in use, of the same shapes and in the relative positions expected by their designer.

83. **Tautness Meter.**—The principle of this appliance is that if a wire be stretched between two fixed points, a pull

is required to deflect or bend it and this pull is a measure of the stretching force. For this purpose the stretched wire rests on two rollers at *a* and *b* respectively and is clamped gently at *c* (Fig. 18).

The two rollers and the clamps are not a straight line, therefore the stiff spring to which they are attached is deflected, and the amount of this deflection is measured on a direct reading dial graduated in pounds. As the inherent stiffness of the wire under test is neglected by this plan, it will be seen that the instrument should be calibrated before use upon a wire of the same kind and size as the wire under test, loaded up with dead weights which are either known beforehand or tested at the time with a good spring balance.

The instrument on the lecture table is made by the Cambridge S. I. Company, and is also useful in attempting to ascribe its proper share of the load to each of the wires leading to all the various parts of the gas bag of a dirigible balloon from the load or gondola below it.

Moreover, if attached to a wire of an aeroplane in flight, it can be watched by a passenger, and note made of the effect of wing-warping, using wing flaps, &c., while by the introduction of a "maximum" hand, the effect of a sudden blow on landing could be easily recorded.

84. I must not close without warmly acknowledging, in addition to the names given in the text, the kindness I have received and the general free exchange of information from H. Farman, Paulhan, Blériot, Esnault-Pelterie; the useful hints dropped by men like Handley Page, Clarke, Short, Low (of the Bristol Company), Ding and other English workers, as well as Berriman's useful book and articles, and the valuable illustrations and facts in the *Aérophile*, *FLIGHT*, the *Acro* and *Technique Aeronautique*, &c.

CORRESPONDENCE.

* * * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in *FLIGHT*, would much facilitate ready reference by quoting the number of each such letter.

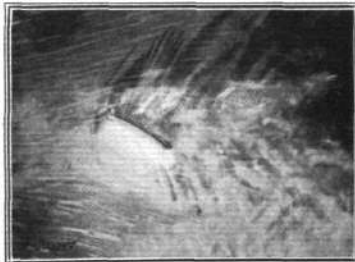
NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

The Thrust Line.

[1141] I enclose a note on the position of the thrust line in aeroplanes and hope that you will find it suitable for publication in *FLIGHT*. I have never come across, in any of the works on flight which I have read, any theory on the position of the thrust line. Some writers would have it through the centre of resistance, some through the centre of gravity, but the majority ignore the matter entirely. Those who touch on it choose one or other position with the idea that it will secure that the attitude will not be affected by thrust variations, but give no theory. The beliefs of designers regarding this subject also vary. As the matter of position is certainly important and the theory which I put forward is, in my

I enclose photographs showing the stream lines about a plane in a current of water. These clearly show an up-current rising to the entering edge and also a down-current ahead of the plane and at a lower level, which might cause loss of lift in the lower plane of a biplane by reducing its up-current.

This down-current does not seem to be explained by the cyclic theory, but is explained by another of Mr. Lanchester's theories. It states that the fluid experiences a tendency to compression ahead of and on a level with the plane. This compression is relieved by the fluid flowing to the regions where there is no such tendency, i.e., above and below the plane, and the up-current and down-current shown are thus caused. The photographs were obtained by fixing the plane in the current so that one of the longitudinal edges was above the surface; fine sawdust was then scattered on the surface of the water and photographed when the area round the plane was well covered. The shutter was set at such a speed that the sawdust was "moved" on the photograph. A similar method might be arranged for work with air, the camera being pointed upwards instead of downwards and the plane



opinion, quite logical, the article should prove acceptable to your readers.

The comparative formula on power required for altitude flying touches on an interesting question which I have never seen reasoned out.

Since the idea of variable speed seems to be in the air, as shown by the offering of the Prix du Grand Ecart, the suggestions of the latter portion of the article seem timely and worthy of publication and the probable discussion to follow.

being fixed vertically on a horizontal plate glass slab above the camera.
Glasgow.

J. M. MACALLAN.

[Enclosure by Mr. J. M. MacAllan.]

On the position of the thrust line in aeroplanes and the thrust and power required for upward trajectories.

In the following note it will be assumed that the aeroplane has an empennage of sufficient area, or in default of an empennage, a

sufficient plane area ahead of the main planes at a greater angle than that of the main planes, so that, neglecting the effect of inertia, the machine is stable and cannot, consequently, be in balance at more than one attitude when in gliding flight.

In gliding the only two forces in action are the resultant of all the air pressures, P , acting at p , the centre of pressure, and the weight, W , acting at g , the centre of gravity. These forces must be equal and in the same straight line.

Let Fig. 2 represent the same aeroplane in horizontal flight, flying at the same attitude as it glides at, for it is desirable that the aeroplane should fly at a constant attitude, whether the direction of flight be downward, horizontal, or upward. If this is so, variations of thrust will not affect the attitude.

Then the position and the direction of P relative to the machine remains unaltered, and g lies in P produced downwards. W , acting vertically downwards at g , must be balanced by making L_H , the vertical component of P , equal to it. Also R_H is the horizontal component of P . Now D , the resultant of the thrust and the weight, must be equal to P and lie in the same straight line as P , and consequently must pass through g . By completing the lower parallelogram we see that T , the thrust, must pass horizontally through g , and must, of course, equal R_H . So the thrust line should pass through the centre of gravity. Since P produced must pass through g , in order that D , which passes through g , can be in the same straight line

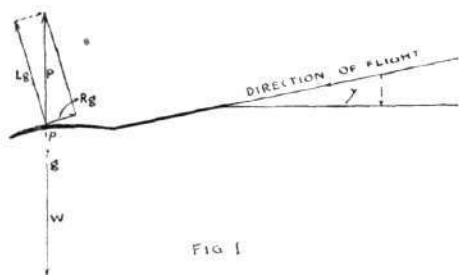


FIG 1

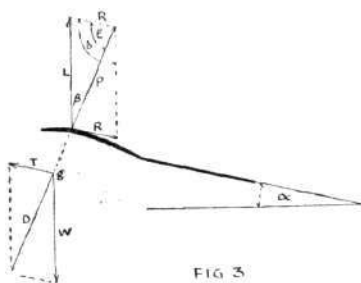


FIG 3

as P , and P only passes through g at the attitude shown (see proviso of first paragraph), the attitude will not be affected by variations of thrust, and the thrust for any chosen trajectory must bear such a relation to the weight that D and P are in the same straight line.

Gliding Speed and Angle (see Fig. 1).

I. γ = angle between P and L_g (since P is vertical and L_g perpendicular to the direction of flight).

$\therefore \tan \gamma = \frac{R_g}{L_g} = \frac{\text{resistance}}{\text{weight}}$ (as given by Chanute).

II. Gliding speed V_g (equal to V_H , the horizontal flight speed when γ is small).

$$W = P = \sqrt{L_g^2 + R_g^2} = \sqrt{L_g^2 + L_g^2 \tan^2 \gamma} = L_g \sqrt{1 + \tan^2 \gamma} = L_g \sec \gamma$$

But $W = L_H = \kappa V_H^2$, and $L_g = \kappa V_g^2$.

$$\therefore \kappa V_H^2 = \kappa V_g^2 \sec \gamma$$

$$\therefore V_g^2 = \frac{V_H^2}{\sec \gamma}$$

$$\therefore V_g = V_H \cos \gamma$$

Altitude Flying (angle of trajectory with horizontal = α). (See Fig. 3.)

III. $\beta = \gamma + \alpha$, δ = angle between L and $R + 90^\circ + \alpha$.

$$\therefore \epsilon = \delta - \beta = 90^\circ + \alpha - (\gamma + \alpha) = 90^\circ - \gamma.$$

$$\text{Now } \frac{R_1}{\sin \beta} = \frac{L}{\sin \epsilon} = \frac{W}{\sin \epsilon}$$

$$\therefore T = R = R_1 = \frac{W \sin \beta}{\sin \epsilon} = \frac{W \sin(\gamma + \alpha)}{\sin(90^\circ - \gamma)} = \frac{W \sin(\gamma + \alpha)}{\cos \gamma}$$

Thrust required for ascending at angle $\alpha = \frac{W \sin(\gamma + \alpha)}{\cos \gamma}$.

IV. Speed on inclined trajectory (V_a).

$$\text{Now } \frac{P}{\sin(180^\circ - \beta - \epsilon)} = \frac{L}{\sin \epsilon} = \frac{W}{\sin \epsilon}$$

$$\therefore P = \frac{W \sin(180^\circ - \beta - \epsilon)}{\sin \epsilon} = \frac{W \sin\{180^\circ - (\gamma + \alpha) - (90^\circ - \gamma)\}}{\sin \epsilon}$$

$$= \frac{W \sin(90^\circ - \gamma)}{\sin \epsilon} = \frac{W \sin(90^\circ - \alpha)}{\cos \gamma} = \frac{W \cos \alpha}{\cos \gamma}$$

\therefore Component of P at right angles to trajectory

$$= \frac{W \cos \alpha}{\cos \gamma} \cdot \cos \gamma = W \cos \alpha$$

But this = κV_a^2 and $W = \kappa V_H^2$.

$$\therefore \kappa V_a^2 = W \cos \alpha = \kappa V_H^2 \cos \alpha$$

$$\therefore V_a = V_H \sqrt{\cos \alpha}$$

V. Now power varies as thrust \times velocity.

Let $P = c T V$.

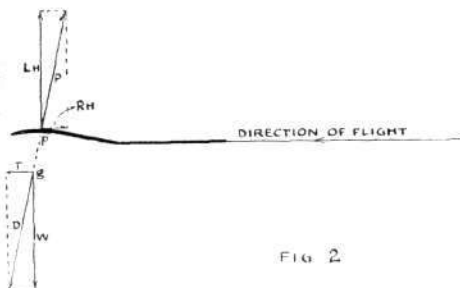


FIG 2

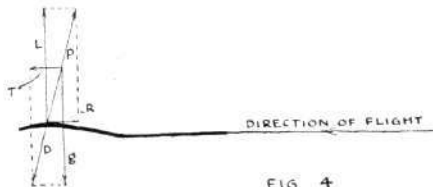


FIG 4

Then power for ascending at α (say, P_a)

$$= c \cdot \frac{W \sin(\gamma + \alpha)}{\cos \gamma} \cdot V_H \sqrt{\cos \alpha}$$

and power for horizontal flight (say, P_H) = $c \cdot W \tan \gamma \cdot V_H$.

$$\therefore \frac{P_a}{P_H} = \frac{\sin(\gamma + \alpha) \sqrt{\cos \alpha}}{\tan \gamma \cdot \cos \gamma}$$

$$\therefore P_a = \frac{P_H \sin(\gamma + \alpha) \sqrt{\cos \alpha}}{\sin \gamma}$$

By substituting in this formula we find that a machine whose gliding angle = 5° , will need 3.86 times the power required for horizontal flight to rise at 15° , 6.12 times to rise at 30° , and 7.38 times to rise at 45° , the attitude for the upward flight being the same as the attitude for horizontal flight. Thus a 9-h.p. aeroplane, whose thrust line passed through its centre of gravity, would require about 663-h.p. to rise at 45° . From formula IV we see that, if the attitude remain unchanged, increase of thrust results, not in increase of speed, but in decrease of speed. Consequently the fitting of a motor or a more efficient propeller to an aeroplane, whose thrust line passes through the centre of gravity, will not increase its speed unless at the same time the angle of the planes, or their area, be decreased.

If we consider an aeroplane whose thrust line passes above the centre of gravity (Fig. 4) we find that in order that D and P may be in the same straight line when the thrust line is horizontal, the centre of gravity g , must be aft of D , and therefore behind the position required for gliding at the same attitude. Now, because of the proviso of our first paragraph, the centre of pressure moves back as the angle of incidence increases, and because of the

position of g , the aeroplane will glide at an angle of incidence greater than that of horizontal flight, and therefore with a decreased speed and an increased gliding angle. On the other hand, with increased thrust we may expect it to fly at a decreased angle with increased thrust. Its speed, if this be so, will be increased as the thrust increases.

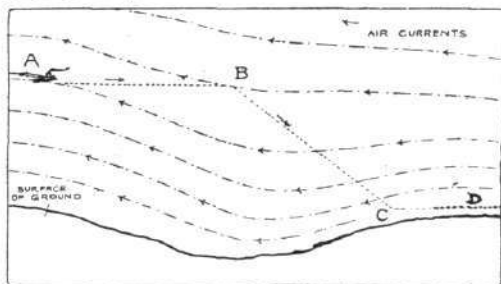
It might be possible to so place the thrust line that this increased speed did not result in an upward trajectory, or that, since the power of rising upwards is necessary, the increased speed will make the trajectory only slightly inclined upwards. If we can do this, as seems quite possible, we could have a machine which, without changing the area of the planes or their angle relative to the machine, would fly faster with increased thrust and would glide at a lower speed to ensure safety in landing. This lower speed would, however, be obtained at the expense of the gliding angle, and the decrease of landing shock due to slower speed might be counterbalanced by increase of shock due to increased gliding angle. In landing, however, the elevator could flatten out the trajectory.

Something might be done by having two sets of propellers, the thrust line of the first set, to be used alone in normal flight, passing through the centre of gravity; and the thrust line of the second set, to be used in conjunction with the first set for speed flying, passing above the centre of gravity. As an alternative, they might be used separately by means of a special clutch on the engine shaft. The idea seems, at any rate, to be worthy of experiment.

Air Currents.

[1142] I was standing the other day at a place where the surface of the ground ran somewhat as in the diagram. There was a series of undulations—ridges with valleys between—and the wind was blowing across them. As I stood there I tried to visualise the path of the air currents, which would more or less follow the contour of the ground, though air coming up the valleys would give a slight general upward trend.

It was evening, and just then a hawk came in sight flying home dead into the wind. When first I saw him he was as at A, gliding on without a wing beat, upborne and propelled by the upward current of air. When he arrived at B



I thought, "Now he will flap," but no, the bird knew better than that; instead, he glided down at a sharp angle to C to within a few feet of the ground, and a very little flapping brought him to D, where he again encountered an upward air stream, and sailed away forward and upward with outspread wings ready to repeat the manoeuvre at the next dip. He was followed at distances by some ten other birds, which all went through the same process.

Of course, the reason for this procedure was evident enough. Finding at B that the wind became unfavourable to soaring flight he glided downwards (and forwards) to C, where, being close to the ground, the wind was weaker and consequently the work easier.

Incidentally he saved himself the work of flapping from B to C. What struck me as worthy of note was the ingenious way in which he managed to place himself in the strongest air currents when favourable, and in the weaker when he had to fight against them, thus using the force of an opposing wind as deflected by the ground to both support him and propel him home.

This surely points a lesson to cross-country flyers, who by adopting similar tactics might save much petrol and increase the distance traversed in proportion. The navigator of the future will have to take these things into consideration.

Richmond, Natal.

V. K. VYVYAN.

Aerial Sign Posts.

[1143] In view of future air traffic I should like to suggest that gas companies be approached all over the country with a view to having the cardinal points of the compass and the name of the place painted on the top of gasometers. I understand that railway companies are to be approached as to having the names painted on station roofs, which I think is a good idea.

W. H. NORTON.

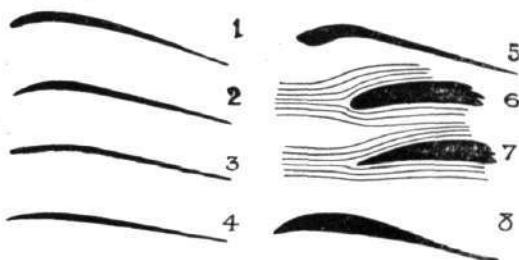
Redhill.

The Dipping Front Edge.

[1144] Your foot-note to Mr. A. A. Griffiths' letter (1036) opens a large field for argument as to which is the most efficient type of dipping entering edge. There are at least three, if not four, different types. Fig. 1 represents the Blériot or blunt entry type, with the hump. By "hump" I mean when the top and bottom surfaces are the greatest distance apart at or just before the centre of the camber (see Fig. 8). Fig. 2 shows the Maurice Farman type, with the hump, but a sharp entry. Sir Hiram Maxim, after his numerous experiments with various types of aerofoils, seems to have decided that this type is the most efficient.

In Fig. 3 we see the Wright type, without the hump, i.e., the under and top surfaces of the planes are parallel at the front.

Fig. 4 shows the type of plane Mr. Roe used in his early machines when he created the world's record of flying with only 9-h.p. (a record which has not yet been beaten). It



will be noticed that there is a slight dipping edge, a slight hump and a sharp entry. They were very similar to those advocated in articles published in *FLIGHT* a short time ago, "Can we Fly Faster for Less Power?"

A section of the Kaufmann Demoiselle-type monoplane wing (illustrated in *FLIGHT*, page 35, Vol. III) is shown in Fig. 5. The maker evidently has been trying to obtain a perfect stream-line entry. Personally I favour Type 2, as it must enter the air with much less shock than the blunt entry, and therefore offer less resistance (Figs. 6 and 7).

Of course I know that in the first case the "hump" (taking the definition given above) was introduced for constructional purposes, but I think it has been kept, through it proving itself so efficient in practice.

Fig. 8 shows a section of the average bird's wing, from which it will be seen that it has a comparatively sharp entry and a large hump. It would be interesting to hear some other correspondents' views on this subject.

Manchester.

SKY PILOT.

Mathematics of the Cambered Plane.

[1145] With reference to "Mathematics of the Cambered Plane," published in *FLIGHT* (No. 108), in which you give several very useful formulae, the following results derived from your "lift and loading" formula may be of interest:—

The angle B for the latest 30-h.p. Nieuport monoplane loaded at 4.7 lbs. per sq. ft. (allowing 200 lbs. for pilot, &c.) at 66 m.p.h. works out at 12° ; for a Blériot, 5 lbs. per sq. ft. at 60 m.p.h. to 15.5° ; R.E.P. to 17° ; and a Breguet "Cruiser" (fully loaded) at 5.1 lbs. per sq. ft. and 53 m.p.h. to 20° ; while the M. and H. Farman machines (ordinary type) work out at 9.5° and 11.5° respectively.

If the angle of declination is taken as the average declination of upper and lower surfaces, I should think the first four results are too high and the last two about right, i.e., the practical load per square foot (in the first four cases) is considerably greater than the theoretical load.

Newcastle-on-Tyne.

C. DAN BURRELL.

MODELS.

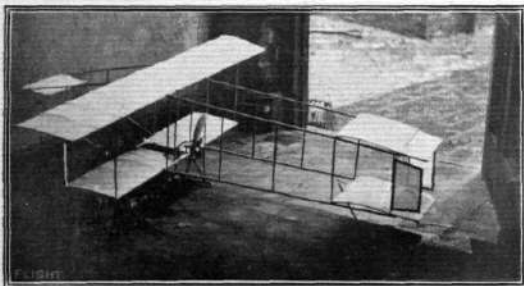
Model Monoplanes.

[1146] In letter 930 Mr. Owen, of Stourbridge Park, wants to know why models of the Blériot type should not fly with a tractor, with the big plane first.

Now the weight of the fuselage is practically the same all the way along from stem to stern, yet if one puts a large plane at one end of the fuselage and a small one at the other such as a Blériot, the tail will naturally drop, having less support than the end of the fuselage on to which the large plane is fixed. On a Blériot the large planes have the motor to support, but not on a model. If anyone wanted to make a flying model of a Blériot without a motor he would have to make both planes nearly the same size, as in sketch, because the only extra weight that the leading plane has to support

is the weight of the propeller and the necessary bearings, which is not very great. When Mr. Owen mentions "far from satisfactory" I should think that when he launched his model it would shoot up head first, because the front part would have so much extra support, not having a motor to support. The same applies to Antoinette, R.E.P., Nieuport, Hanriot, Tellier, &c.

Enclosed is a photo of a model Farman which I have



constructed. I obtained all the necessary material from Mr. A. Melcombe, Bedford, for a very reasonable price. Stafford.

A. V. A. TAW.

The Half-Crown Model.

[1147] I enclose a photograph of a model which I saw how to make in your splendid paper. It is the 2s. 6d. model described some weeks back. I have had some very good flights with it, and find it very strong.



This is my sixth model. I intend making a simple biplane next. If any of your readers could tell me of a cheap and simple model I should be very pleased.

Brundall.

A. H. READ.

Parchment Planes.

[1148] Perhaps it may be of some interest to readers of FLIGHT to know of a cheap and serviceable covering for model aeroplanes in butter parchment, which is obtainable in large sheets from any grocer's at a reasonable price. First wash it in water, and while it is still wet fasten by means of glue very slackly over the framework, and when it dries you obtain a stiff serviceable plane.

Liverpool.

"A WELLWISHER."

PUBLICATIONS RECEIVED.

Catalogues.

Aeroplane Accessories. R. Blackburn and Co., Balm Road, Leeds.

Aeroplanes and Propellers. The Blackburn Aeroplane Co., Balm Road, Leeds.

Aeronautical Patents Published.

Applied for in 1910.

Published April 20th, 1911.

- 11,701. E. C. KNY. Under-carriages of aeronautical machines.
- 13,324. RHEINISCH WESTFÄLISCHE SPRENGSTOFF A.-G. Aerial propellers
- 18,739. H. M. CAKE. Propulsion for aircraft.
- 27,072. W. J. D. BRADFORD. Airships.
- 30,190. E. DENIEFORT. Aeroplanes.

Applied for in 1911.

Published April 20th, 1911.

- 4,408. F. ADAM AND R. STAMKORT. Automatic balancing.

DIARY OF COMING EVENTS.

British General Events.

- July 1 .. Gordon-Bennett Aviation Cup Contest.
- July 22-Aug. 5 .. Daily Mail Round England Contest.
- Oct. 31 .. Close of British Michelin Cup.

Foreign Fixtures.

- April 27-May 16 .. German National Circuit—Aix-la-Chapelle, Cologne, Essen
- Bielefeld, Brunswick, Berlin (973).
- May .. Paris—Bordeaux—Paris.
- June 18 .. European Circuit—Paris, Brussels, London, Paris.
- June 4-12 .. Johanni-thal National Meeting.
- June 6-11 .. Rome Circuit.
- June 12-18 .. Rome-Turin race.
- June 18-22 .. Meeting during Kiel Regatta.
- June 19-26 .. Turin Aviation Week.
- June 23-27 .. Circuit Kiel—Berlin.

PRINCIPAL CONTENTS.

	PALE
Our Prize Scheme or Model Makers	346
Portrait of M. Pierre Prier	347
Scheme for Flying Machine Model Makers	348
London to Paris Non-Stop	350
Cross-Country Flying by Mr. Grahame-White and Mr. Graham-Gilmour	350
Royal Aero Club Notes	351
Progress of Flight about the Country	351
From the British Flying Grounds	352
British Notes of the Week	354
Foreign Aviation News	356
Future of School Aero Club Movement	359
Steering by Compass	360
The Isaacson Engine	361
Problems Relating to Aircraft	362
Correspondence	363

FLIGHT.

44, ST. MARTIN'S LANE, LONDON, W.C.
Telegraphic address: Truditor, London. Telephone: 1828 Gerrard.

SUBSCRIPTION RATES.

FLIGHT will be forwarded, post free, to any part of the world at the following rates:—

UNITED KINGDOM.			ABROAD.		
	s.	d.		s.	d.
3 Months, Post Free ..	1	8	3 Months, Post Free ..	2	9
6 " " " ..	3	3	6 " " " ..	5	6
12 " " " ..	6	6	12 " " " ..	11	0

Cheques and Post Office Orders should be made payable to the Proprietors of FLIGHT, 44, St. Martin's Lane, W.C., and crossed London and County Bank, otherwise no responsibility will be accepted.

Should any difficulty be experienced in procuring FLIGHT from local news-vendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.